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ABSTRACT

This report discusses enrollment planning by colleges and universities as it concerns the understanding of why students choose to attend one particular college over another. First, the past responses of colleges to enrollment-threatening changes are presented. Next, an explanation is given of why knowledge of student college choice behavior is important for enrollment planning, student marketing, and recruitment. Then, the conceptual foundations for the study of college choice behavior (psychology, sociology, economics) are discussed, followed by an explanation of why it is important to understand what determines enrollment fluctuations, such as an increasing job market or economic recession. Micro-level studies of college choice behavior, which are used to estimate the effects of institutional and student characteristics on the probability that a particular individual will choose a particular college, are examined. Finally, information related to the following questions is presented and discussed: (1) "what factors are important to students of nontraditional age in making college decisions?" (2) "what are the phases of the college choice process?" (3) "what factors are important in creating a desire to attend college?" (4) "why is the college search and application phase so important?" and (5) "how can an institution more effectively manage enrollment in the selection and attendance phase?" Contains an index and 227 references. (GLR)

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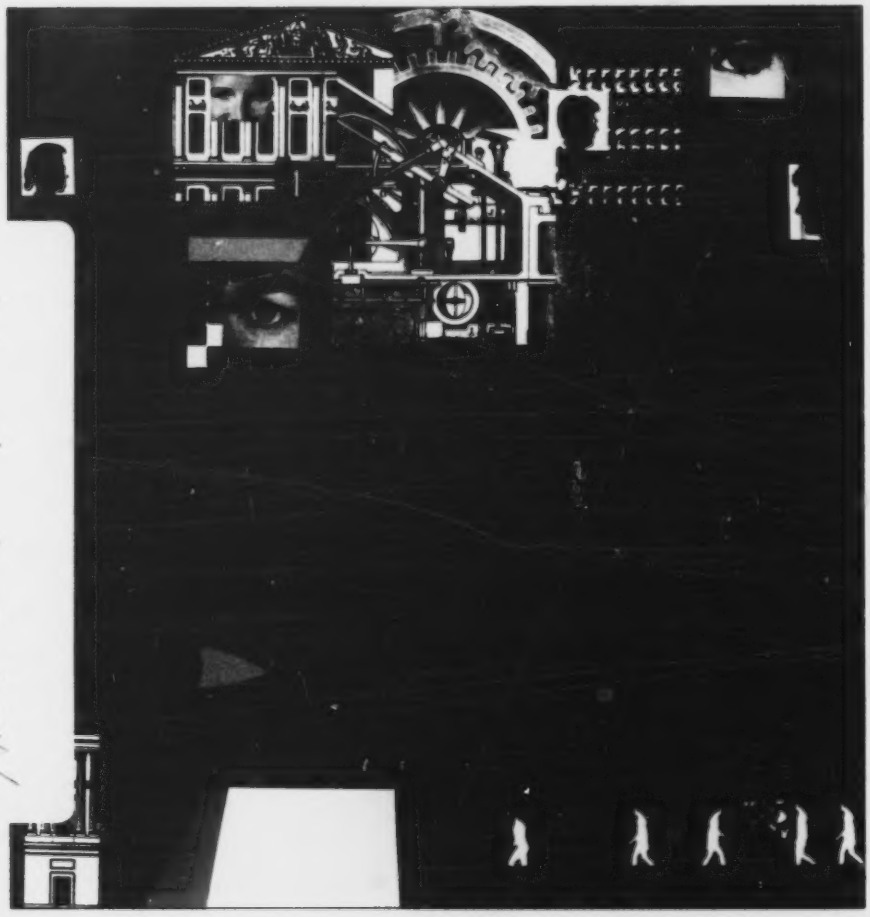
College Choice

Understanding Student Enrollment Behavior

Michael B. Paulsen

1990 ASHE-ERIC Higher Education Reports



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College Choice:
Understanding Student Enrollment Behavior

by Michael B. Paulsen

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EXECUTIVE SUMMARY

In the 1970s, projections clearly indicated that the traditional college student cohort of 18 to 21 year olds would fall by 25 percent between the late 1970s and the early 1990s (Wiche 1988). Colleges unhappily watched the number of traditional college-level jobs per college graduate decrease. Potential students became consumers and flexed their newfound marketplace muscle. Fears of cutbacks in important sources of student financial aid intensified as the 1970s came to an end. The higher education marketplace was changing in many ways which threatened to produce significant enrollment declines.

How Did Colleges Respond to Enrollment-Threatening Changes?

Faced with prospects of reduced enrollments, budget deficits, retrenchment, and institutional closings, many administrators paid more attention to enrollment maintenance, became more responsive to market interests and more aware of the increasingly competitive nature of student recruitment, and began to engage in market-oriented activities intended to attract students. Each year's students became more like academic shoppers or consumers (Riesman 1980), preferring vocational, occupational, or professional courses over courses in the traditional arts and sciences. In response, many institutions made prompt market-oriented modifications in academic programs to match student demand (Stadtman 1980).

Why Is Knowledge of College Choice Behavior Important for Enrollment Planning, Student Marketing, and Recruitment?

From the 1970s through today, colleges have developed two basic market-oriented desires. They want to plan and forecast their enrollment more effectively, and they want to influence the college-going decision-making process of desired students. The study of college choice behavior is of great practical importance for administrators in promoting greater effectiveness in these two areas. The study of enrollment behavior of students in groups (macro-level) indicates how changes in environmental and institutional characteristics affect an institution's total enrollment. The study of the college choice behavior of individual students (micro-level) indicates the ways in which environmental, institutional, and student characteristics affect a student's choices about whether or not to

attend college and which college to attend. It is the results of these studies which provide the fundamental knowledge bases for enhancing the effectiveness of enrollment planning activities and student marketing and recruitment activities (Hossler 1984).

What Are the Conceptual Foundations for the Study of College Choice Behavior?

Most studies of student enrollment behavior have been conducted by educational researchers with backgrounds in either psychology, sociology, or economics. These disciplines offer somewhat different perspectives and conceptual foundations for the study of college choice behavior. Psychologists emphasize the psychological environment, or climate, of an institution, its impact on students, and student-institution fit (Astin 1965). Sociologists view the formation of college-going aspirations as part of a general status attainment process. Economists view college attendance decisions as a form of investment-like decision-making behavior (Jackson 1978).

Why Is It Important to Understand What Determines Enrollment at Different Levels?

The most important contribution of the macro-level enrollment studies may be their estimates of the probable effects of environmental characteristics on an institution's total enrollment. Understanding the effects of environmental changes on enrollment can provide helpful guidelines for enrollment forecasting (Hoenack and Weiler 1979) and for making the assumptions necessary to estimate revenue and expenditure in planning and budgeting processes. For example, the enrollment effects of changes in the economy often are unexpectedly complex but important to understand. Positive enrollment effects can result from increasing job market opportunities for college graduates or from decreasing job market opportunities for noncollege graduates.

General economic recessions usually reduce job market opportunities in positions traditionally held by noncollege graduates more than they do opportunities in positions normally held by college graduates. As a result, general economic recessions can stimulate enrollment by making job market opportunities for college graduates relatively superior to those for noncollege graduates. Also, when conditions in the college job market deteriorate, enrollment tends to favor colleges

emphasizing professional or vocational curricula. However, when college job market opportunities increase, enrollment tends to favor colleges emphasizing traditional liberal arts and sciences curricula (Paulsen and Pogue 1988).

Why Is It Important to Understand Individual Student Enrollment Behavior?

The greatest contribution of the micro-level studies of college choice behavior is their ability to estimate the effects of institutional and student characteristics on the probability that a particular individual will choose a particular college. Understanding the enrollment effects of such characteristics can help enrollment managers tailor and target their college's marketing mix of programs, prices, and places to those students possessing characteristics similar to those who most often matriculate at their college.

Some enrollment effects of the interaction between student and institutional characteristics are especially important to understand. For example, student responsiveness to college cost decreases as income and academic ability rise, and vice versa. Also, recent research has shown that students are now about equally sensitive to changes in the major parts of college cost: tuition, room and board, commuting, financial aid, and foregone earnings (Manski and Wise 1983).

What Factors Are Important to Students of Nontraditional Age in Making College Decisions?

Students of traditional and nontraditional age respond similarly to some factors in their college-going behavior. Other factors are either uniquely important or simply more important for nontraditional students. For example, a student of nontraditional age is more likely to attend college: the higher the student's own occupational status, the higher the student's own income, the younger he or she is, when the student is not married, when the student has fewer children under 18, when working full-time, when a veteran, when living a short distance from a college, when tuition is lower, and when financial aid is available (Bishop and Van Dyk 1977).

What Are the Phases of the College Choice Process?

Many researchers have relied on some variation of a three-phase model of the college choice process (Jackson 1982). The college aspiration formation stage is the one in which

fundamental educational aspirations are formed and may last from early childhood through high school and beyond. The college search and application phase includes acquiring and examining information about colleges to identify a limited number of institutions to which to apply. The college selection and attendance phase involves the evaluation of alternatives to make a final college selection.

What Factors Are Important in Creating a Desire to Attend College?

Three categories of factors may have significant influence on the formation of college going aspirations: socioeconomic background, academic ability, and contextual (parental encouragement, peers' plans, neighborhood or high school status, self-esteem, college curriculum, teacher and counselor encouragement). There are some important implications for early intervention in the college aspiration formation process. For example, parental encouragement, a contextual factor, has been found to have potentially greater impact than either socioeconomic status or academic aptitude. Parental encouragement is a social psychological process, open to influence through counseling of parents and their children.

Why Is the College Search and Application Phase So Important?

It is in this phase of the choice process that most colleges are eliminated from consideration by students. The socioeconomic background and academic ability of students continue to influence student decision making during this phase, leading them to preselect certain colleges for application. The persistent pattern appears to be that as students' family income, educational aspirations, aptitude, achievement, and parental education increase, their choices become more likely to include high-cost, highly selective, more distant, private, four-year colleges and universities (Ihlanfeldt 1980; Zemsky and Oedel 1983).

Of course, potential students exist in substantial quantities across all levels of socioeconomic backgrounds and academic abilities. Therefore they will preselect institutional categories across all levels of institutional selectivity, cost, distance from home, and so on. Each college must work hard to find appropriate matches between the characteristics of the students it seeks to recruit and the characteristics of its own insti-

tution. Each college must work hard to be included in the choices of such students.

How Can an Institution More Effectively Manage Enrollment in the Selection and Attendance Phase?

Individual institutions engaged in academic market research usually study student enrollment behavior in this final phase (Litten et al. 1983). Analysis of data collected from admitted student questionnaires on student characteristics and ratings of the characteristics of a college and its competitors allows a college to identify its competitors, assess its image, determine its market position compared to competitors, identify what determines matriculation choices, and identify student market segments by enrollment yield.

Given the availability of such information, an institution has two broad enrollment strategies:

- recruit students with characteristics consistent with the characteristics of the college;
- adjust the characteristics of the college so they are more consistent with the student characteristics desired by the college.

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CONTENTS

Foreword	**xvii**
Introduction	**1**
Studying College Choice Behavior	**3**
A Changing Higher Education Marketplace	3
Recruiting the New Student Consumer	4
Enrollment Planning, Student Recruitment, and College Choice	6
Conceptual Foundations of College Choice	7
College Choice and Macro-Level and Micro-Level Studies	8
Enrollment Behavior	**11**
National Studies	11
State Studies	15
Institutional Studies	16
Summary and Guidelines for Enrollment Planners	17
College Choice and Individual Students	**23**
Marketing Concepts and Terminology	23
Student Characteristics	26
Institutional Characteristics	26
How Student and Institutional Characteristics Interact	27
Environmental Characteristics	28
Student Responsiveness to Cost	29
College Attendance and Nontraditional Students	30
Stages of College Choice	**35**
How Models Help	35
College Aspiration Formation	37
Search and Application	44
Understanding Search and Application	46
Selection and Attendance	59
Market Research and Its Role	61
Ethical Guidelines for Marketing Research	67
Conclusions and Recommendations	**71**
Why Understanding Enrollment and College Choice Are Important	71
Implications for Institutions: Macro-Level Studies	72
Implications for Institutions: Micro-Level Studies	73
Recommendations for Research and Policy	78
References	**81**
Index	**97**

FOREWORD

It is well understood that most colleges and universities can no longer be passive in attracting students to their campuses. In the past, having a high number of student applicants indicated healthy admissions. But more students are now sending out a greater number of applications as they shop around for the best academic and student aid opportunity. Consequently, more institutions are having to accept a greater number of applicants in order to ensure that they will have an adequate number of new students. Meanwhile, it is important for an institution to attract and admit students whose educational goals and interests are compatible with the institution's strengths. If this does not happen, the students will be dissatisfied and in all probability will leave the institution before completing their education. This is a loss to both the institution and the individual.

Admissions officers can ensure that students will "fit" the institution if they have a sound understanding of the reasoning that underlies a student's enrollment decision-making process. Some of the students' criteria are fairly basic and obvious, such as academic programs offered, availability of student residence halls, and the success graduates have in getting certain types of jobs or in going on to graduate schools. Other issues concerning choice are more subtle. To what degree are students' application decisions based on the success of last year's football team? Are other schools offering better student aid packages? And what is the local reputation of the institution? These and many other issues are now known to influence student decision making.

In his report, Michael B. Paulsen, instructional development specialist in the Office of Instructional Resources and an adjunct associate professor of higher education at the University of Illinois at Urbana-Champaign, thoroughly reviews the major literature addressing the factors and processes students use in choosing a college. Paulsen examines the changing marketplace, the new consumer, marketing concepts, the interactions of student and institutional characteristics, and the stages of college choice. Finally, he suggests procedures and policies for institutions and makes recommendations for future research.

Concerns about student recruitment are no longer limited to the admissions office. Deans, department chairs and individual faculty are increasingly being called upon to help increase student enrollment. Their knowledge of how and

why students make choices can greatly influence their effectiveness in the admissions process. Michael B. Paulsen has developed a report that will be useful to anyone concerned with effective enrollment planning and student recruitment.

Jonathan D. Fife
Professor and Director
ERIC Clearinghouse on Higher Education

INTRODUCTION

In the early 1970s, the higher education community anticipated demographic changes, economic changes, and public policy changes which threatened decreasing enrollments, excess capacity, and institutional closings. In an era of rising student consumerism, these expected changes profiled a new buyer's market in higher education.

In the face of anticipated budget deficits and shrinking enrollments, institutions began to focus more on changes in the higher education marketplace. The increasing instability of environmental characteristics made it more difficult to make an accurate enrollment estimate, upon which so many budgetary decisions are based. Institutions paid more attention to the characteristics of other institutions relative to their own as concern about attracting students increased. Increasing numbers of colleges began to engage in various forms of what we now refer to as academic marketing activities.

Among the many professional practices in a comprehensive enrollment management process, an important marketing related activity is the effective recruitment of desired students. An understanding of student enrollment decision making, or "college choice" behavior, is a primary need for effective student recruitment.

If more educators learn what many have already learned about what determines enrollment, the college choice behavior of students, and marketing research perhaps we can increase the chances that there will still be "three thousand futures" in American higher education.

STUDYING COLLEGE CHOICE BEHAVIOR

This report introduces readers to college choice behavior as a valuable base for more effective enrollment planning, student marketing, and recruitment. It also outlines the conceptual foundations and methods used in the study of college choice behavior. The report reviews the enrollment-threatening changes in the higher education marketplace of the 1970s, the context within which many colleges and universities first became clearly market-oriented in their planning. In addition, the results of 25 years of studies in this area are reviewed and evaluated.

The higher education marketplace was changing in terms of demographics, economics, public policy, and student preferences...

A Changing Higher Education Marketplace

From the perspective of the 1970s, the pessimistic outlook for higher education enrollment in the 1980s appeared to be well substantiated and was quite sobering. Between the late 1970s and the mid-1990s, the traditional 18- to 21-year-old student group was expected to shrink by 21 percent to 25 percent (Carnegie Council 1980, p. 153; Centra 1980, p. 19; Western Interstate Commission for Higher Education [WICHE] 1988, p. 9). For some regions, such as the Northeast, projected decreases ranged from 35 to 40 percent (Breneman 1983 p. 15; WICHE 1988, p. 13).

The types of institutions expected to be most vulnerable to the demographic decline included the less selective private institutions. Those expected to be less vulnerable were the public community colleges and universities and the more selective private colleges (Carnegie Foundation 1975, p. 76; McPherson 1978, p. 196). While some promoted the idea of pursuing nontraditional student sources, most were convinced that even substantial effectiveness with such recruitment would fall far short of offsetting the dramatic and dismal demographic changes ahead.

Watching increasing numbers of college graduates being forced to accept jobs which were held traditionally by high school graduates convinced many educators that even the economic motivation for college attendance was waning and would exacerbate the expected enrollment problems. Between 1969 and 1974, the ratio of college-level jobs (professional and managerial) to college level workers fell from 1.9 to 1.6 (Freeman 1976, p. 18).

Over the same period, inflation-adjusted starting salaries of college graduates fell by an average of 2.2 percent to 5.1 percent per year, depending on the field of study, while earn

ings of other U.S. workers actually increased. During the first half of the 1970s, the college participation rate of 18 to 24 year olds fell from 35.2 percent to 27.8 percent (Freeman 1975, pp. 289, 298).

Such changes made college appear a less attractive option for new high school graduates and threatened to decrease enrollment. At a time when opportunities in the college job market were clearly deteriorating, it was hard for the higher education community to share the confidence of some economists who spoke of the great future need for college graduates in conjunction with the inevitable expansion of the services sector.

As cutbacks in sources of financial aid to students loomed on the horizon as a prominent concern of administrators (Baldridge et al. 1982, p. 33), and student consumers were demanding to call the tune whenever they paid the piper (Riesman 1980), fear of budget deficits, retrenchment, and institutional closures expanded. The higher education marketplace was changing in terms of demographics, economics, public policy, and student preferences, and was threatening to generate enrollment declines.

Recruiting the New Student Consumer

Faced with the possibility of reduced enrollments, budget deficits, and retrenchment in an age of rising student consumerism, many administrators in the 1970s began to fix their attention on ways to maintain and effectively forecast their enrollment. With a shrinking pool of traditional prospects, colleges began to pay increased attention to recruitment of qualified students from pools of prospective students that were not shrinking, such as older students, women, part-time attenders, minorities, and foreign students. These latter groups turned out to be the primary demographic sources of enrollment maintenance in the 1980s (Frances 1989).

Institutions also became more responsive to market interests, more aware of the increasingly competitive nature of the student recruitment process, and began to engage in market-oriented activities intended to attract desired students to their campuses. Each institution had to seek ways to make itself more attractive than its competitors in the eyes of desired students.

One of the earliest and most wide-spread examples of such market-oriented institutional responses took place when many

students began to assert themselves in their role as consumers of academic programs.

In an apparent attempt to increase their chances for employment upon graduation, growing percentages of students spurned the traditional arts and sciences majors and opted for more explicitly occupational or job-related programs. One survey showed that between 1968 and 1974, 52 percent of responding institutions reported major increases in undergraduate enrollment in vocational and professional studies while only 27 percent reported similar increases in traditional liberal arts enrollment (Glenny 1976, p. 26).

Students were becoming shoppers or consumers, prefering to consume vocational, occupational, or professional courses rather than traditional liberal arts courses. The market-oriented responses of institutions to changing preferences of students were both prompt and extensive. To make themselves attractive to potential students, colleges changed their academic programs, generating major reallocations of campus resources and eventually, in many cases, a change in institutional mission.

Of course, some institutions made few or no changes of this kind in response to market pressure. Recent evidence indicates that philanthropy-poor, tuition-dependent institutions made proportionately more programmatic changes than the more philanthropy-rich institutions (Chaffee 1984; Paulsen 1990).

Based on the 1978 Carnegie Council Survey, 43 percent of institutions added programs in engineering; 55 percent added programs in business; 67 percent added programs in legal, judicial, and police sciences; and 65 percent added programs in health sciences. Meanwhile, 66 percent of institutions dropped foreign language programs, 16 percent dropped physical sciences programs, and 14 percent dropped programs in the humanities (Stadtman 1980, p. 142).

In 1976, the Carnegie Commission reclassified 91 of its 719 liberal arts colleges as comprehensive colleges (Carnegie Council 1973, 1976). By 1987, the new Carnegie Classification shifted many more of its liberal arts II colleges into its comprehensive colleges category, with many others in that group conferring less than 50 percent of their degrees in the liberal arts but remaining too small in enrollment to be classified as comprehensive (Carnegie Council 1987). By 1985, institutions of higher education as a group were conferring over

50 percent of their bachelor's degrees in "occupational or professional fields" (Rehnke 1987, p. 1).

When suppliers become feverish in their efforts to provide what consumers want, a buyer's market has evolved (Ihlanfeldt 1975). Many institutions clearly responded to a buyer's market by changing their college mission. Some may have experienced "a loss of a sense of their historic mission" in an effort to accommodate the demands of the student consumer for more vocationally oriented coursework (Pfnister and Finkelstein 1984, p. 118). Perhaps they believed that survival meant that they "must cater to the student customer" (Riesman 1980, p. 108).

Such market-oriented activities of colleges and universities were at first surprising and, in some ways, disappointing for many postsecondary educators. Today, a wide variety of market-focused behaviors are common and normal at most colleges and universities. These behaviors often are described as the application of academic marketing principles to the student recruitment component of an institution's overall enrollment management system.

Enrollment Planning, Student Recruitment, and College Choice

Essentially, colleges from the 1970s through today have had two basic market-oriented desires. They have wanted to more effectively plan and forecast their enrollment, and to more effectively influence the enrollment decision-making process of prospective students. This is where the study of college choice behavior is of great practical importance to administrators.

> *To plan for enrollments and to manage enrollments, professionals must begin with an understanding of the demand for higher education and of how students decide to enroll in a specific college or university . . . an important step in the development of a specialized knowledge base for enrollment managers* (Hossler 1984, p. 8).

Macro-level studies of college choice behavior show us how changes in environmental factors (usually beyond an institution's control) and institutional characteristics (usually within an institution's control) can affect an institution's total enrollment. These often are referred to as enrollment demand

studies. Micro-level studies of college choice behavior show us how particular environmental, institutional, and student characteristics can affect a student's choice regarding whether or not to attend college and which college to attend. These two types of studies offer a valuable knowledge base for increasing the effectiveness of enrollment planning activities and student marketing and recruitment activities, respectively.

Conceptual Foundations of College Choice

Educational researchers with disciplinary backgrounds from sociology, economics, and psychology have conducted much of the research on college choice. Sociologists view college choice from the perspective of *status attainment process,* while economists view it as a form of *investment decision-making behavior* (Jackson 1978, pp. 549-550). Psychologists examine college choice from the perspective of the *impact of college experiences and environments on students and optimal student-institution fit.*

In their study of the status attainment process, the work of many sociologists has focused on the earliest stages of the college choice process. Perhaps their greatest contribution to college choice research has been their examination of the factors that influence the process by which a student forms educational aspirations or plans to attend college. Results consistently have emphasized the importance of characteristics of the student's family and high school background, as well as the student's academic ability.

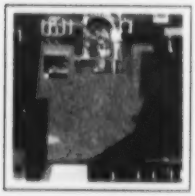
Economists often view college-going behavior as a manifestation of an investment-like decision-making process. Their studies have indicated that student background and ability, so important in status attainment and the early formation of educational aspiration, remain important throughout the general process of college choice, interacting in important ways with institutional and environmental factors in college-going investment decision-making.

A series of pioneering college choice studies by psychologists found that

> *the characteristics of the students enrolled by an institution are highly related to measures of the psychological environment or 'climate' of the institution. If, as these findings suggest, the college environment is determined to a large extent by the kinds of students at the institution* (Astin 1965, p. 3)

then perhaps the widely observed tendency of prospective students to attend colleges with student bodies similar to themselves is a healthy, natural process of student self-distribution. These findings also suggest that colleges wishing to change their institutional climate and its impact on students may need to begin by recruiting students with desirable attributes different from those of their present students.

The most general and consistent findings of each group of studies offer general guidelines which may increase the effectiveness and appropriateness of certain essential enrollment planning and student recruitment practices.



College Choice and Macro-Level and Micro-Level Studies

The dedication of higher education scholars to the study of how environmental, institutional, and student characteristics influence enrollments and college going behaviors has been a highly productive response to the changing marketplace. Each study of the higher education marketplace and college-going behavior can be classified in one of two primary categories: *macro-level* and *micro-level studies*. The two types of research designs differ primarily in the type of data used and in the statistical procedures used to analyze the data.

Macro-level studies focus on the relationships between the enrollment behavior of student groups and various environmental, institutional, and student characteristics. These relationships have been studied across both groups at one point in time and across many years for one group.

Such studies are designed to describe, explain, and predict the total, or "aggregate," enrollment for an institution, a state, a region, or a nation. *Linear regression* is the most common statistical procedure used to analyze data on the behavior of students in groups. Such procedures provide estimates of the effect on an institution's enrollment of a change in an environmental or institutional characteristic.

These studies are valuable particularly to administrators and policy-makers wishing to consider the probable enrollment effects of environmental or institutional characteristics in the processes of policy formation, environmental scanning, enrollment planning and forecasting (Hossler 1984, pp. 13, 28).

Micro-level studies focus on the relationships between the enrollment behavior of individual students and various

environmental, institutional, and student characteristics. These relationships have been studied primarily across many students at one point in time. *Logit, probit,* and *discriminant models* are the most common statistical procedures used in these studies to analyze data on how individual students make choices.

Such studies are designed to estimate the effect of various environmental, institutional, and student characteristics on the "probability" that a student will choose to pursue a particular college or noncollege option from among a set of options. They are useful particularly for administrators and policy-makers wishing to consider the effects of changes in institutional or student characteristics on individual student choices among college and noncollege options (Hossler, Braxton, and Coopersmith 1989, pp. 281-282).

For micro-level studies, excellent measures of student characteristics drawn from individual student data can be combined with summary measures of institutional and environmental characteristics in the careful examination of individual student college choice behavior. A *weakness of the micro-level studies* is that they are cross-sectional in nature and it is difficult to devise meaningful measures of environmental characteristics which vary across individual students at one point in time. Fortunately, this is the forte of the macro-level studies.

A *weakness of the macro-level studies* is that they rely on group data so that student characteristics must be measured in terms of group averages which are unable to reflect variation across individual students. However, this is the forte of the micro-level studies.

Clearly, a thorough understanding of the findings of both research methods is essential for effective policy-making, enrollment planning, and student recruitment.

> *Student college choice is a complex phenomenon. Efforts of policy-makers at the federal, state, and institutional levels to influence the college choice process will have to be more carefully targeted if they hope to increase their effectiveness* (Hossler and Gallagher 1987, p. 218).

Micro-level studies of individual student choice behavior also provide a foundation for institution specific marketing research studies. Such studies are based on the competitive

nature of the college choice process and offer a variety of implications for enrollment-influencing changes in institutional policies. An individual institution now can estimate the effects of specific institutional and student characteristics on the probability that an inquirer or applicant can be turned into a matriculant. The marketing research study provides an institution with the power "to see oneself through students' eyes" (Hossler, Braxton, and Coopersmith 1989, p. 281).

This report turns now to examine the nature and practical implications of the findings of macro-level and micro-level studies conducted over the past 25 years.

ENROLLMENT BEHAVIOR

Macro level studies often are called *enrollment demand studies*. They help an institution plan for and forecast its total enrollment and examine and estimate the way in which changes in environmental characteristics, such as demographic or economic factors, influence its enrollment.

The "enrollment process begins with strategic planning that . . . should address a realistic assessment of the demand for the college's product," states Hossler 1984, p. 144). But strategic planning is "the process of developing and maintaining a strategic fit between the institution's goals and capabilities and its changing marketing opportunities," in Kotler and Fox's definition (1985, p. 73).

The **first step** in a college's strategic planning process is an analysis of its environment. Such an analysis identifies major characteristics of the environment, anticipates and estimates the likely impact on enrollment of changes in these factors, and whether this impact will be positive or negative (Kotler and Fox, 1985, p. 75). The results of this environmental analysis, or scanning, can provide administrators with important initial enrollment planning assumptions and a context within which to consider possible institutional responses to anticipated environmental changes.

This report will now review national, state, and institution-focused studies, both separately and in combination, to offer guidelines for more effective environmental scanning, institutional responding, and enrollment planning, important aspects of the strategic planning component of enrollment management.

National Studies

Table 1 presents the results of three sets of studies which investigated the relationships between total, or aggregate, enrollments (or enrollment ratios) and various environmental, institutional, and student characteristics. The table classifies 14 studies according to whether they examined what determines enrollment at the national, state, or institutional level. It also shows which studies found which factors to be important determinants of enrollment. A (+) or (–) in the table indicates whether increases in each of the environmental, institutional, or student characteristics tend to increase or decrease enrollment. All variable names are abbreviated, with full definitions presented below table 1.

TABLE 1

MACRO-LEVEL ENROLLMENT STUDIES

		TYPES OF VARIABLES																		
		ENVIRONMENTAL								INSTITUTIONAL							STUDENT			
		POP	CJOBS	NJOBS	SARMY	IRATE	COMP	FAID		LOC	URBAN	PART	TUIT	SEL	LCLM	STATE		ABIL	INC	PED	
NATIONAL STUDIES	YR																				
Campbell/Siegel	67	+											-						+		
Freeman	75	+	+	-	+																
Galper/Dunn	69	+			-														+		
Handa/Skolnik	75		+	-									-						+		
Mattila	82	+	+	-	+			+					-						+		
STATE STUDIES																					
Corazzini, et. al.	72	+		-									-					+	+	+	
Hopkins	74	+					-			+			-						+	+	
Stafford et al.	84	+																	+	+	
Tannen	78	+	+	-		-		+					-						+	+	
Wish/Hamilton	80	+	+	-																	
INSTITUTION STUDIES																					
Hoenack/Weiler	79	+	+	-			-	+					-								
Krakower/Zammuto	87			-				+				+	-	+	-	+					
Paulsen/Pogue	88	+	+										-		?						
Strickland et al.	84	+									+		-							+	

Variable Definitions:

A. Environmental Characteristics
- Pop = relevant population of traditional college aged cohort
- Cjobs = job market opportunities for college graduates
- Njobs = job market opportunities for noncollege graduates
- Sarmy = size of the armed services
- Irate = average interest rate in the economy
- Comp = percent of eligibles enrolled in or residing near competing institutions
- Faid = federal and state financial aid per student

B. Institutional Characteristics
- Loc = location with respect to the pool of potential students
- Urban = an urban location
- Part = percent of an institution's enrollment that is part time
- Tuit = tuition or tuition and fees
- Sel = admissions selectivity of an institution
- Lclm = percent of degrees conferred in arts and sciences
- State = percent of institution's enrollment from in state

C. Student Characteristics (Group Averages)
- Abil = average academic ability of relevant student group
- Inc = family income level
- Ped = parental education level

As expected, enrollment at the national level was directly related to various measures such as the population of potential students and the numbers of high school graduates (Campbell and Siegel 1967; Freeman 1975; Galper and Dunn 1969; and Mattila 1982).

The relationship between enrollment and possible job market opportunity is more interesting and informative. While enrollment was related directly to salaries and employment opportunities for college graduates, it was related inversely to wage and employment opportunities for noncollege graduates (Freeman 1975; Handa and Skolnik 1975; and Mattila 1982). These findings highlight the importance of recognizing and measuring the two separate parts of the job market. One set of indicators is needed to measure job market opportunities for college graduates, while another is needed to measure opportunities for noncollege graduates.

For the typical high school senior or graduate, the two measures of job market opportunities may have opposite effects on the likelihood of college attendance. When job market opportunities in professional and managerial positions, traditionally filled by college graduates, improve, they increase the perceived benefits of college and the likelihood of attendance.

However, when job market opportunities in positions available for noncollege graduates improve, this increases the perceived costs of college and decreases the likelihood of attendance. Foregone income is part of what a college student gives up in order to attend college. When wages and employment for noncollege graduates are increasing, the "opportunity cost" of college is also increasing (McConnell and Brue 1986, pp. 76-78).

For a high school senior or graduate who is unsure about college attendance, monetary benefits and costs can influence his or her choice between college and noncollege. For example, when the economy moves into a recession, employment in positions available for noncollege graduates may decrease substantially, while employment in college-level professional and managerial positions remains more stable. On average, the noncollege graduate now has less to give up to attend college (lower opportunity cost) and the attractiveness of opportunities for college graduates relative to noncollege graduates increases along with the likelihood of college attendance (Mattila 1982, pp. 250-251; Paulsen and Peseau 1989,

When wages and employment for noncollege graduates are increasing, the "opportunity cost" of college is also increasing.

pp. 10-11)

When the economy expands out of a recession, the pattern of incentives is reversed. Employment of noncollege graduates, which decreased rapidly during the recession, now will increase rapidly during the recovery. On the other hand, employment in college-level positions, having decreased less during the recession, will now increase less rapidly during the recovery. As a result, the attractiveness of opportunities for college graduates relative to noncollege graduates would decrease. At the same time, the likelihood of college attendance would fall, all else equal.

Public policies affecting the growth in the size of the armed forces is another important determinant of enrollment at the national level. However, the nature of this relationship seems to depend on whether the sample period of study included World War II and the Korean War, or the Vietnam War.

During the earlier period, enrollment fell when the size of the armed forces increased, and enrollment increased when the number of discharges from the armed services increased (Galper and Dunn 1969). During the Vietnam period, however, the proportion of 18 to 24 year olds inducted each year and the number of servicemen on active duty were associated with enrollment increases, while only the cumulative proportion of 18 to 24 year olds in the armed services was associated with enrollment decline (Freeman 1975; Mattila 1982).

These results indicate a shift in attitudes toward service in the armed forces between the two periods. It appears that in the more recent period, avoidance of military service may have provided incentive to attend college.

While the national studies clearly focused primarily on environmental determinants of enrollment, they also considered one institutional characteristic (tuition) and one student characteristic (income). Both characteristics were measured in terms of group averages.

As expected, enrollment at the national level was directly related to income (Campbell and Siegel 1967; Galper and Dunn 1969; Handa and Skolnik 1975; and Mattila 1982), and inversely related to tuition (Campbell and Siegel 1967; Handa and Skolnik 1975).

A composite index of the benefits and costs of college can be computed to estimate the rate of return to an investment in a college education. Enrollment at the national level was related directly to such a measure of rate of return in a study

by Mattila (1982). Rate of return *increased* when earnings of persons with one or more years of college increased, or if financial aid to students increased. Rate of return *decreased* when earnings of high school graduates with no college education increased, or when tuition and fees increased.

State Studies

While most factors determining enrollment examined in the state studies also were investigated in the national studies with similar results, the state studies considered two additional environmental factors (interest rates and proximity of competing institutions), one additional institutional characteristic (location or accessibility), and two additional student characteristics (parental education and student ability).

Environmental factors

Interest rate measures represent indicators of the cost of borrowing to attend college. As expected, enrollment at the state level was related inversely to market interest rates. A one percent decrease in interest rates was associated with nearly a one percent increase in a state's college participation rate (Tannen 1978, p. 495).

Proximity of competing institutions. Public sector enrollment at the state level was inversely related to the proximity or accessibility of private institutions to pools of potential students. On the other hand, private sector enrollment was related directly to the accessibility of private institutions to the population of eligible students (Hopkins 1974).

Those findings highlight the importance for potential students of both the *adverse* effects on enrollment when competing institutions are nearby, and the *positive* effects on enrollment when an institution has an advantageous location.

Student characteristics

While national-level studies focused most on environmental characteristics, state-level studies focused most on student characteristics by using measures based on group averages. Enrollment in these studies was related directly to such measures as *parental education* (Corazzini, Dugan, and Grabowski 1972; Hopkins 1974; Stafford, Lundstedt, and Lynn 1984; and Tannen 1978), and *Project Talent* achievement test measures of student academic ability (Corazzini et al., 1972).

The effects of student characteristics on enrollment are con-

sidered more thoroughly later in this report where micro-level studies are reviewed. Since such studies rely on individual student data, their measures of student characteristics are superior to those achievable with group data in these macro-level studies.

Institutional Studies

All of the environmental and student determinants of enrollment examined in the institutional studies also were investigated in the national and state studies with similar results. However, the institutional studies considered the enrollment effects of five additional institutional characteristics:

- percentage of in-state students
- percentage of part-time students
- percentage of degrees conferred in liberal arts fields
- admissions selectivity
- urban versus rural location.

Urban location. An urban location was found to be an important determinant of enrollment at the institutional level. "The less rural [more urban] the industrial character of the geographical area, the greater the contribution to college enrollment" (Strickland et al. 1984, p.48).

Part-time students. Krakower and Zammuto (1987) studied the effects of various institutional characteristics on enrollment at different types of institutions. Enrollment at all types of public institutions and enrollment at private doctoral institutions were related to the percentage of part-time students. These findings might represent, in part, the positive effects on enrollment of an urban location where there is a larger potential pool of students who work full time, or part time, for employers willing to finance education, and who are in a position to commute to attend college part time.

Admissions selectivity. Public sector enrollment was related directly to admissions selectivity measured by the average freshman SAT score.

In-state students. Finally, enrollment at public doctoral and private two-year institutions was related directly to the percentage of their enrollment accounted for by in-state students.

Though they give no explanation for these differences across institutional types, the authors strongly advise against

making generalizations about what determines enrollment from one institutional type to another (Krakower and Zammuto 1987).

Curriculum. An institution's curriculum is an important factor in determining enrollment. Between 1975-76 and 1980-81, enrollment at private general baccalaureate institutions was related inversely to the percentage of degrees conferred in traditional liberal arts and teacher training fields, and directly related to degrees conferred in nontraditional professional or occupational fields (Krakower and Zammuto 1987).

Examining the relationship from a different perspective, Paulsen and Pogue (1988) studied a sample of private liberal arts and comprehensive institutions over a more extended period from 1965 through 1981. The effect of curriculum (measured by the percentage of degrees conferred in traditional liberal arts and teacher training fields) on enrollment varied according to what was happening to conditions in the job market for college graduates.

All else equal, when conditions in the college job market deteriorated, enrollment growth favored institutions conferring more degrees in professional or occupational programs such as business, accounting, or mass communications. However, when conditions in the college job market improved, enrollment growth favored colleges conferring greater percentages of degrees in traditional liberal arts and teacher training fields (Paulsen and Pogue 1988, p. 286).

A possible explanation for this interesting pattern is that when conditions in the college job market are poor, employers are likely to find sufficient numbers of occupationally trained graduates who may be initially better prepared for many specialized "positions for which arts and sciences graduates must be further trained at the employer's expense. This may give the more specialized graduate a market advantage over his more generally educated counterpart" (Paulsen 1983, pp. 112-113).

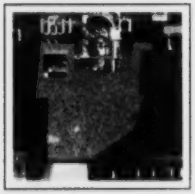
Summary and Guidelines for Enrollment Planners

Studies of what factors determine enrollment have provided us with a foundation for more effective environmental analysis, enrollment planning, and forecasting. These studies have examined the relationships between group enrollment behavior (at the national, state, or institutional level) and environ-

mental characteristics, institutional characteristics, and student characteristics. This research provides us with the background necessary to predict the probable direction of change in enrollments associated with changes in any one of these factors, all else equal.

Noteworthy in table 1 is the fact that all factors examined at more than one level were found to have similar effects on enrollment at each level. The greatest strength of the studies taken as a whole may be their ability to estimate the probable enrollment effects of environmental and institutional characteristics. These factors are measured, appropriately and meaningfully, using group average measures.

However, such studies are less effective in estimating the probable effect of student characteristics on enrollment. The imprecision of group average measures of student characteristics makes them clearly inferior to the measures which data on individual students can provide.



Aggragate, or macro-level, enrollment studies often are referred to as research on the demand for higher education.

> *A conceptual understanding of the demand for higher education is a part of the expertise of enrollment management . . . /and/ this research is an important part of the specialized knowledge base that can professionalize and lend credibility to enrollment managers* (Hossler 1984, pp. 13, 28).

The following list of generalizations is drawn from the findings of the aggregate studies of enrollment determination. They represent the most consistent and dependable macro-level findings regarding the effects on enrollment of changes in environmental and institutional characteristics. The list is offered to aid institutions in formulating basic assumptions on enrollment planning.

1. *Demographic Picture.* Enrollment is directly related to the size of the relevant population of eligible students, including the number of high school graduates in recruitment areas.
2. *Job Market Benefits of College.* Enrollment is directly related to job market opportunities for college graduates, and inversely related to job market opportunities for non-college graduates.

3. *Opportunity Costs of College.* Enrollment is inversely related to the income that people attending college forego. During general economic recessions, foregone income costs tend to decrease, while during general economic expansions, the opportunity to earn income tends to increase.
4. *Size of Armed Services.* Recent research suggests that enrollment is directly related to the annual percentage of 18 to 24 year olds inducted into the armed services (possibly due to avoidance of military service). However, it remains inversely related to the cumulative proportion of the traditional college going age group which is in the armed services.
5. *Direct Costs of College.* Enrollment is directly related to factors which reduce direct costs such as federal, state, and institutional financial aid. It is inversely related to factors which raise direct costs such as higher tuition or higher interest rates for student borrowing.
6. *Competition.* Enrollment is inversely related to the proximity of competing institutions to pools of potential students.
7. *Location.* Enrollment is directly related to having an advantageous location to potential students. An urban location is particularly advantageous because of its accessibility to pools of potential students in general, and to potential part-time attenders in particular.
8. *Curriculum.* One measure of an institution's curriculum is the percentage of degrees it confers in traditional liberal arts and teacher training fields as opposed to nontraditional professional or occupational fields such as business, engineering, or social work. The enrollment attractiveness of curriculum in these terms depends on what is happening in the job market for college graduates.

When conditions in the college job market deteriorate, enrollment growth favors institutions placing greater curricular emphasis on specialized professional or occupational curricula. When conditions in the college job market improve, enrollment growth favors institutions placing greater curricular emphasis on traditional liberal arts and teacher training curricula.

Variations in enrollment changes

While macro-level studies have been consistent in their findings regarding the "direction of change" in enrollment due

to changes in environmental and institutional factors, estimates of the "magnitude of change" vary considerably.

An interesting and important study conducted by Krakower and Zammuto (1987) demonstrated the considerable variation in the magnitude of enrollment changes due to environmental and institutional characteristics. They observed significant variations "between the same types of institutions across the public and private sectors and different types of institutions within both the public and private sectors" (p. 348). Their conclusion was that generalizing the magnitude of enrollment change due to environmental and institutional characteristics across either institutional type or sector usually will be inaccurate (p. 352).

To obtain more accurate estimates of the magnitude of such enrollment changes for an individual institution, the enrollment management system should call upon its institutional research office. For social scientists in the office, any one of the following approaches should be both straightforward to carry out and potentially effective:

- Assemble and analyze time series data on relevant environmental and institutional factors for your college, estimating the magnitude of enrollment effects for each factor using multiple regression.
- Use cross section data on institutions similar to your own and then proceed as above.
- Assemble and analyze both time series and cross section data on institutions similar to your own and proceed as above.

The third option may be the most fruitful because the range of variables for obtaining meaningful measures is wider and also because additional control techniques are available when you pool time series and cross section data (Krakower and Zammuto 1987; Paulsen and Pogue 1988; and Paulsen 1989b).

An excellent example of a research office's effectiveness in estimating the magnitude of the effects of variables on enrollment for a particular institution is found in Hoenack and Weiler (1979). They used a model of institutional enrollment determination to forecast the proportion of eligible high school graduates who attended the University of Minnesota.

They used time series data and measures of job market

opportunities for college and noncollege graduates, the opportunity costs of college, the direct costs of college (tuition and financial aid), and a measure of the accessibility of competing institutions to eligible high school graduates.

Their model explained nearly 90 percent of the year to year variation in the enrollment ratio over a 29-year period, with the standard error of the estimate ranging from only .6 percent to 2.2 percent (Hoeneck and Weiler 1979, p. 100).

COLLEGE CHOICE AND INDIVIDUAL STUDENTS

While the macro-level studies examine the enrollment behavior of students in groups, the micro-level studies focus on the factors which influence the decision-making processes of individual students who must choose from college and noncollege options. Micro-level studies shift the focus of research from national, state, and institutional enrollment amounts to the estimation of the probability that an individual student will choose a particular option.

Using primarily multiple regression, logit, and probit estimation procedures, researchers seek to identify the environmental, institutional, and student characteristics that may influence the probability of a specific option being chosen. Next, they try to estimate the effect that changes in each characteristic may have on the probability that a student will make a particular choice.

The first set of micro-level studies reviewed in this section are based on large national or regional datasets and focus primarily on the choices of traditional-aged students. The second, and smaller, set of studies reviewed investigate the college-going decision-making of students of nontraditional age.

The primary "task of the institution is to determine the needs and wants of target markets, and to satisfy them . . . "

The findings are reviewed, analyzed, and synthesized in an effort to develop generalizable theories of the influence of various student, institutional, and environmental attributes on individual college choice behavior.

Two of the principal researchers and theory-builders in this field summarized their purpose as follows: "Although we have tried to give a broad view of the determinants of college-going behavior, our work has been motivated in large part by issues of current policy concern" (Manski and Wise 1983, p. 1). Findings from these micro-level studies are useful for policy formation and effective student marketing and recruitment practices aimed at influencing a prospective student's college decision-making process.

The practical applications of understanding college choice behavior can be communicated more clearly with the aid of the helpful concepts and terminology of academic marketing.

Marketing Concepts and Terminology

The "marketing concept" for educational institutions means that a college will be able to achieve its goals most effectively by considering the preferences of potential students (Litten, Sullivan, and Brodigan 1983, p. 14). "Marketing is the analysis, planning, implementation, and control of carefully formulated

programs designed to bring about voluntary exchanges of values with target markets to achieve institutional objectives" is the broader definition of marketing devised by Kotler and Fox (1985 p. 7).

The primary "task of the institution is to determine the needs and wants of target markets, and to satisfy them through . . . appropriate and competitively viable programs and services" (Kotler and Fox p. 10). When these practices are applied in higher education, Litten (1980, p. 42) refers to the process as "academic marketing."

One marketing goal institutions might want to consider is to determine how the perceptions held by admitted applicants regarding its college as compared to its competitors may be enhanced to achieve the most favorable match between the college's goals and student preferences (Maguire and Lay 1981, p. 137).

Colleges are learning to apply the marketing concept effectively by proceeding through the following steps:

Identify the competition. Identify the institutions with which your college most often competes.

Determine your image and market position. Determine what image potential students have of your institution, and how this compares to the images they hold of your closest competitors.

Market segmentation. Divide potential students into groups according to student characteristics which may differentiate among them in terms of the relative attractiveness of your image and that of your competitors. In other words, identify groups possessing characteristics which tend to increase the likelihood that they will find your image attractive, thereby increasing the probability they will want to matriculate at your college.

A market segment is "a group of people who exhibit characteristics, behavior, desires, needs, perceptions, or other phenomena that are similar within the group but are distinct from the rest of the market or from other groups in the market" (Litten, Sullivan, and Brodigan 1983, p. 15). Market segmentation is a specific market research technique which divides potential students into separate groups according to specific

student characteristics or profiles of characteristics. This is important because student preferences on various college attributes often vary according to student characteristics.

Common segmentation variables include:

- geographic—region, city or county size, population density, distance from institution;
- demographic—age, sex, family size, family life cycle, parents' educational attainment, income, parents' occupational status, student's occupational and employment status, religion, race, nationality;
- academic—educational level, educational aspirations, aptitude, achievement;
- psychographic—social class, lifestyle, personality, values, attitudes, preferences for college attributes;
- behavioral—benefits sought, type of user, rate of usage, loyalty status, readiness stage;
- market yield—primary, secondary, tertiary;
- phase in college choice process—prospects, candidates, applicants, admitted applicants, matriculants, alumni (Ihlanfeldt 1980, pp. 77–90; Ingersoll 1988, p. 211; Kotler and Fox 1985, p. 179).

Determining a marketing strategy

Kotler and Fox (1985) define a marketing strategy as "the selection of a target market, the choice of a competitive position, and the development of an effective marketing mix to reach and serve the chosen market" (p. 132). The marketing mix in higher education is a combination of college attributes arranged in the following categories: programs, prices, promotions, and places of delivery.

The effective college must develop and promote its attributes so that they generate the most effective match between the preferences of students with desired characteristics and the college's mission. This means identifying target markets where students have desired characteristics and where enrollment could be increased through mission-consistent adjustments and improvements in program offerings, prices, the places where they are offered, and the effectiveness with which these attributes are accurately communicated and promoted.

The rest of this report discusses many important practical applications of college choice behavior for effective student marketing and recruitment.

Student Characteristics

General findings regarding the effect of student characteristics on the likelihood of college attendance or the selection of a particular institution can guide recruiters in subdividing potential student pools into groups possessing characteristics similar to those who most often matriculate at their institution. Such guidelines can help institutions identify markets with the greatest potential for recruiting students.

Based on characteristics of student background and ability alone, individuals are more likely to attend college when:

1. they are white rather than nonwhite (Jackson 1988; Manski and Wise 1983).
2. they are not married (Borus and Carpenter 1984; Stephenson and Eisele 1982).
3. family income is higher (Christensen, Weisbrod, and Melder 1975; Jackson 1978, 1988; St. John 1990).
4. parents' educational attainment is higher (Kodde and Ritzen 1988; Manski and Wise 1983.
5. father's occupational status is higher (Conklin and Dailey, 1981; Leslie, Johnson, and Carlson 1977).
6. parental encouragement is greater (Radner and Miller 1975; Trent and Medsker 1968; Conklin and Dailey 1981).
7. their own educational or occupational aspiration is higher (Borus and Carpenter 1984; Conklin and Dailey 1981).
8. academic aptitude is higher (Anderson, Bowman, and Tinto 1972; Blakemore and Low 1983; Kodde and Ritzen 1988)
9. high school academic achievement is higher (Leslie, Johnson, and Carlson 1977; St. John 1990).
10. a college preparatory curriculum is followed in high school (Borus and Carpenter 1984; Conklin and Dailey 1981).
11. more peers plan to attend college (Manski and Wise 1983; Nolfi et al. 1978).

Institutional Characteristics

An understanding of the general and direct effects of institutional characteristics on college choice can assist enrollment managers to develop and implement the best marketing strategies. These strategies will include the most attractive marketing mix of programs, delivered in appropriate places, at acceptable prices.

In terms of institutional characteristics, the attractiveness of college in general, and the attractiveness of a particular college tend to increase when:

- tuition is lower (Corman and Davidson 1984; St. John 1990; Tierney 1980, 1982).
- when financial aid is greater (Leslie and Fife 1974; St. John 1990; Stephenson and Eisele 1982).
- room and board costs are lower (Manski and Wise 1983; Nolfi et al. 1978).
- the distance from home to college is less (Anderson, Bowman, and Tinto 1972; Blakemore and Low 1983).
- admissions selectivity is higher (Kohn, Manski, and Mundel 1976; Tierney 1980, 1982).
- curriculum offerings are greater (Bishop 1977; Kohn, Manski, and Mundel 1976).

How Student and Institutional Characteristics Interact

Other findings of great practical importance but less widely understood and applied involve the ways in which student background and ability interact with institutional characteristics in determining student selection of a college. Several of these characteristics tend to either increase—or decrease—the effect of institutional cost and quality on college choice.

A better understanding of how student and institution characteristics interact and affect college choice can help enrollment managers to more effectively tailor their marketing mix according to students in various markets. This is important because student preferences regarding college vary according to student characteristics.

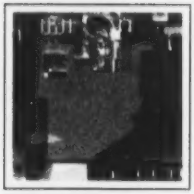
The following may serve as a foundation for such efforts:

College becomes less attractive to students when tuition expenses, room and board expenses, and distance from home increase.

However, these effects are significantly greater for students at lower income levels and for those with lower aptitude. At higher levels of student income and aptitude, these effects become less important (Manski and Wise 1983; St. John 1990; Tierney 1982).

College becomes more attractive as the availability of financial aid increases, particularly scholarship aid.

However, this effect is reduced for students at higher in-



come levels because they have less chance of receiving financial aid (Blakemore and Low 1983; Leslie and Fife 1974; Manski and Wise 1983).

The financial aid effect is enhanced for those of high academic achievement and for those who are nonwhite because these two characteristics increase the chance of getting financial aid, especially scholarship aid (Blakemore and Low 1983).

Furthermore, the higher probability of aid for nonwhites is important because it enhances the chances that they will have access to higher education institutions. It also enhances the possibility that they will attend since they also are more cost-sensitive.

St. John and Noell (1989, pp. 577–79) found that for black and Hispanic minorities, grants alone or aid packages with loans and grants were more likely to promote college attendance than aid in the form of loans alone.

How selective an institution is in its admissions policy is a measure of quality for many students.

On average, therefore, the attractiveness of college increases with this measure of quality.

However, when students select a particular institution to attend, they tend to rely on a selection process based on the difference between their own aptitude and the average aptitude of students attending particular institutions.

Generally, students prefer to attend a college where the average aptitude of students is equal to, or only moderately exceeds, their own aptitude (Radner and Miller 1975). A typical student

> *would be most likely to choose the college with an average SAT score about 100 points higher than his own. He would be less likely to choose a school with a higher average, and also less likely to choose a school with a lower average. . . . A student does not necessarily prefer the highest quality school* (Manski and Wise 1983, p. 19).

Environmental Characteristics

The results of macro-level studies reveal that a variety of environmental factors have an important impact on enrollment behavior. Unfortunately, in micro-level studies, it is more difficult to devise meaningful measures of environmental factors since they vary across students. However, a number of studies

have examined the influence of job market factors on college choice behavior.

Most of the studies examined in this section are based on large national or regional datasets. This means that local economic conditions, which vary across different locations, have been available. Micro level studies regarding the impact of job market factors on enrollment behavior generally support the findings of macro level studies.

A student is more likely to attend college

- when job market opportunities for college graduates increase (Bishop 1977; Kodde and Ritzen 1988; Leslie, Johnson, and Carlson 1977). Increases in salary or employment opportunities for college graduates increases their perception of the monetary benefits of college. This, in turn, increases the probability they will attend a higher education institution.

- when job market opportunities for noncollege graduates decrease (Corman and Davidson 1984; Kodde and Ritzen 1988). When wage and employment opportunities for noncollege graduates decrease, the amount of income students forego while attending college also decreases. This increases the likelihood students will attend.

There also is evidence that the family income of a student influences this effect. In their analysis of National Longitudinal Survey data on over 20,000 1972 high school seniors, Nolfi et al. (1978, p. 151) found this factor was "considerably larger for the low income than for the high income group."

When job market opportunities for noncollege graduates decrease, the probability of college attendance would rise more for lower income than for higher income individuals. Alternatively, when job market opportunities for noncollege graduates increase, the probability of college attendance would fall more for lower income individuals than for higher income individuals.

Student Responsiveness to Cost

A review of college choice studies examined the differences and changes in student responses to five key components of college cost: tuition, room and board, travel, cost of foregone earnings, and financial aid (Leslie and Brinkman 1987,

pp. 195–197). The researchers observed that Kohn, Manski, and Mundel (1976) found students responsiveness to tuition was greater than to room and board costs, which was greater than their response to travel costs.

Similarly, Bishop (1977) found responsiveness to tuition exceeded response to room and board and travel costs, which greatly exceeded response to the cost of foregone earnings. Jackson (1978) and Leslie and Fife (1974) found that student response to tuition was significantly greater than their responsiveness to financial aid.

More recent studies have suggested that student responsiveness to most of these components of college cost are similar. Manski and Wise's 1983 "highly regarded work . . . shows roughly equal student sensitivity among tuition, student aid, dormitory costs, and foregone earnings . . ." (Leslie and Brinkman 1987, p. 196).

Tierney's (1982) recent study also indicates that students now respond similarly to changes in tuition and aid. However, while students appear to be responding more equally to tuition, room and board, financial aid, and foregone earnings, there is still insufficient evidence to conclude that they respond similarly to travel costs.

Some of the most recent evidence comes from a study of the class of 1982. The findings indicate that for all income classes combined, students' college attendance was considerably more sensitive to financial aid than to tuition (St. John 1990, p. 168). For low income students, an increase in grant aid increased the likelihood of attendance more than two and one-half times as much as an equal decrease in tuition (p. 169). Such

> *findings seem intuitively consistent with enrollment trends during the 1980s, when . . . many institutions have adopted enrollment management techniques that emphasize using a set portion of tuition revenues for need based grant aid. Discount pricing could be expected to keep enrollments higher than projected, if in fact students were more responsive to changes in grant aid than to changes in tuition* (St. John 1990, p. 172).

College Attendance and Nontraditional Students

The largest single demographic source of enrollment growth in the 1980s has come from students of nontraditional age

(25 or older). Between 1976 and 1983, two thirds of the overall increase in higher education enrollment was due to increases in attendance among students aged 25 and over. Between 1980 and 1985, enrollment among those aged 24 and under decreased by 412,000, while enrollment among those aged 25 and over increased by 561,000, so that total enrollment grew by the difference of about 150,000. Between 1990 and 2000, those aged 35 to 64 will increase by 24.1 percent (Frances 1989, pp. 34, 158, 159).

Clearly, it has become increasingly important for us to understand the enrollment behavior of individuals in this expanding group. Unfortunately, very little research attention has been given to the study of nontraditional student enrollment.

This report assembles from available research the student, institutional, and environmental determinants of college attendance among nontraditional students. More detailed explanation of the complex effects or interaction of some variables is provided as needed.

In examining the effects of these factors, recruiters should reflect on the practical implications regarding market segmentation and the appropriate marketing mix for the recruitment of women. Women accounted for 98.4 percent of the overall increase in enrollment between 1980 and 1987 (Frances 1989, p. 155).

. . . for all income classes combined, students' college attendance was considerably more sensitive to financial aid than to tuition.

Nontraditional age students are more likely to attend college when:

1. the student is white (Bishop and Van Dyk 1977).
2. the student's own occupational status is higher (Anderson and Darkenwald 1979; Bishop and Van Dyk 1977; Corman 1983).
3. the student's previous educational attainment is greater (Anderson and Darkenwald 1979).
4. the student's own income is greater (Anderson and Darkenwald 1979).

A researcher noted some of the more specific effects of income on attendance. For instance, income level among women is positively related to attendance at a college, but negatively related to attendance at an occupational school. Those with lower incomes may be more likely to attend occupational school. Also, income was found to be negatively, but not significantly, related to college attendance among men.

A possible explanation for the differences between sexes may be that since men's incomes are higher on average, the effect of foregone income may outweigh the effect of the ability to pay from higher incomes among men (Corman 1983, p. 263).

5. the student is at a younger age (Anderson and Darkenwald 1979; Corman 1983).
6. the student is not married. This finding was statistically significant for women only (Corman 1983, p. 261).
7. the student has fewer children under 18 years of age (Bishop and Van Dyk 1977).
8. the student is working full time (Anderson and Darkenwald 1979).
9. the student is a veteran (Bishop and Van Dyk 1977).
10. the student has college-level educational aspirations (Bers and Smith 1987; Rogers, Gilleland, and Dixon 1988; Wolfgang and Dowling 1981).

This finding focuses primarily on the reasons students give for returning to school. Paltridge, Regan, and Terkla (1978) found that men were more likely than women to cite a degree objective, while women were more likely to cite personal enrichment as their primary motivation. Bers and Smith (1987) found through focus group interviews that men more often cited job skill improvement as their primary motivator, while women identified critical life changes such as divorce or children leaving home (p. 41).

Wolfgang and Dowling observed that, overall, students list "cognitive interest" and "professional advancement" as their top reasons for attendance (1981, p. 643). Finally, Rogers, Gilleland, and Dixon discovered the most frequently cited reasons were degree objectives, job changes, and self-improvement. However, students who were female, younger, and had lower incomes were most likely to cite job changes as important reasons; and those with lower educational attainment were the most likely to refer to self-improvement (1988, pp. 202 and 205).

11. the student resides a short distance from a college (Corman 1983; Paltridge et al. 1978).

Bishop and Van Dyk observed that the proximity of a two-year college was particularly important for nontraditional students (1977, pp. 59 and 62). Bers and Smith discovered in

their focus interviews with nontraditional students that they really appreciated the "convenience" of having a college "minutes from their homes" (p. 41).

12. the college's tuition is lower (Bers and Smith 1987; Corman 1983).
13. the student is receiving financial assistance through financial aid (Paltridge et al. 1978), veteran's benefits (Anderson and Darkenwald 1979), or on welfare (Bishop and Van Dyk 1977).
14. job market opportunities for noncollege graduates are poor (Bishop and Van Dyk 1977; Corman 1983).
15. job market opportunities for college graduates are good (Bishop and Van Dyk 1977).

Corman found that when conditions in the job market for college graduates are good, nontraditional students are more likely to attend occupational schools (1983, p. 261).

16. the student is not in the armed services (Bishop and Van Dyk 1977).

Those generalizations are essentially a list of basic enrollment planning assumptions about nontraditional student choice behavior. It provides a context for applying academic marketing principles to the effective recruitment of students aged 25 and over. Each item has implications for identifying target markets, bases for market segmentation, or tailoring an appropriate marketing mix of programs, prices, promotions, and places for attracting students from a particular nontraditional student market segment.

STAGES OF COLLEGE CHOICE

The increasingly competitive and complex nature of college choice and expansion of the marketing approach to student recruitment enhance the desire to better understand and more effectively influence the college choice process. This has led both researchers and practitioners to develop more detailed specifications, or models, of the college choice process.

At the beginning of the 1980s,

> *few admissions officers operate from a systematic model of the influences on student college choice. Lacking such a model, colleges may overlook ways to increase the effectiveness of their recruiting or, conversely, overestimate the influence of recruiting activities in which they do engage* (Chapman 1981, p. 490).

How Models Help

To help meet the need, therefore, researchers developed various kinds of models during the decade of the 1980s. Chapman, for instance, developed a *causal model* illustrating the relationships between important student and institutional characteristics and college choice behavior (p. 492).

Numerous suggestions for *multi-stage models* of the choice process appeared in the literature throughout the decade. Among the first, Ihlanfeldt expressed the process in terms of the useful *funnel* concept in which students pass through the categories of prospects, candidates (inquirers), applicants, admittants, matriculants, and alumni (1980, p. 86). A *three-stage model* included (1) deciding to go to college, (2) investigating colleges, and (3) application, admission and matriculation (Hanson and Litten 1982, p. 75).

A modified version of the three stage model was inserted into a detailed causal framework, much like a more detailed and expanded version of Chapman's model with environmental characteristics added to student and institutional factors (Litten 1982, p. 388).

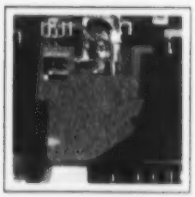
In a *seven-stage model*, students consider (1) generic alternatives (like college, work, or military service), (2) product form alternatives (like public or private, large or small), (3) a total college set, (4) an awareness set, (5) a consideration set, (6) a choice set, and (7) decision (Kotler and Fox 1985, pp. 205–6).

Others focused more on broader classification of the phases of the choice process. Chapman and Jackson separated the

process into just two phases: college search and college choice, with a more detailed specification of the second phase (1987, pp. 12-14). Davis-Van Atta and Carrier offered a three-stage model comprised of the inquiry decision process, the application decision process, and the enrollment decision process (1986, p. 76).

Such shorter classification schemes are quite useful for focusing research efforts and classifying findings. However, these particular ones omit what probably is the longest and the most powerful phase of predicting college attendance. This is the phase in which fundamental educational aspirations are formed. It may last from early childhood through high school and beyond.

As the next section explains, the formation of basic aspirations for postsecondary education is strongly related to student background and ability factors.



Two simplified and parallel *three-stage models* which include the critical educational aspiration phase are those presented in the work of Hossler and Gallagher (1987) and Jackson (1982). The three stages, or phases, have different names, but the same meaning in the two models. Jackson's stages are preference, exclusion, and evaluation (1982, p. 239). Hossler and Gallagher's stages are predisposition, search, and choice (1987, p. 208).

Hossler, Braxton, and Coopersmith's recent review of college choice literature is organized according to a three-stage model (1989, pp. 248-9).

- First stage: represents the formation of educational aspirations as described above.
- Second stage: includes the acquisition and examination of information about colleges to identify a limited set of institutions to which to apply.
- Third stage: involves the evaluation of alternatives to make a final college selection for matriculation.

This section of the report will examine each stage of the choice process in terms of the findings of those studies whose primary focus is on the nature of choice behavior in one of those specific stages. The following labels will be used to describe the process and to suggest end points for each stage: (1) college aspiration formation, (2) college search and application, and (3) college selection and attendance.

College Aspiration Formation

This section examines and interprets the findings of 16 studies whose primary focus is on the *earliest stage* in the college choice process. This stage involves the factors and processes which influence and shape a student's educational aspirations. The development, or formation, of aspirations to continue education beyond the secondary level can take place over a long period from early childhood through high school and sometimes beyond. Table 2 shows the factors each of the 16 studies found to be related significantly to the formation of college aspirations.

The earliest stage of choice behavior continues to be carefully studied by sociologists, psychologists, and other educational researchers. Most studies are based on micro-level or individual student data, and focus on the nature of factors related to student family background, academic ability, and high school and neighborhood context. To analyze data, researchers have relied primarily on cross tabulations and correlational studies, path analysis, regression analysis, and analysis of covariance structures.

A better understanding of the effects of such student characteristics on their plans to attend college can assist enrollment managers in dividing potential students into groups with characteristics similar to their own college or university's typical matriculating students' profiles. Generalizations based on these findings can help colleges identify student markets with high recruitment yield potential, and are suggestive of possible early intervention strategies to encourage college attendance.

Background, ability, and context

The various ways in which student background, ability, and contextual factors influence the process of forming college aspirations are described below. First, based on study findings, the probable direct effect of each variable on college aspiration formation is identified. An individual is more likely to want to attend college under the following conditions:

- when the student is white (Kerckhoff and Campbell 1977; Tuttle 1981).
- when the student's parents are married (Stage and Hossler 1989).

- when the student's family size is large (Conklin and Dailey 1981).
- when the parents' educational attainment is greater (Stage and Hossler 1989; Tuttle 1981).
- when the father's occupational status is higher (Conklin and Dailey 1981; Davies and Kandel 1981).
- when family income is higher (Stage and Hossler 1989; Tuttle 1981).
- When student academic aptitude is greater (Conklin and Dailey 1981; Tuttle 1981).
- when student academic achievement is greater (Carpenter and Fleishman 1987; Davies and Kandel 1981).
- when parental encouragement is greater (Carpenter and Fleishman 1987; Davies and Kandel 1981).
- When disciplinary problems in school are fewer (Kerckhoff and Campbell 1977).
- when student self esteem is greater (Portes and Wilson 1976).
- when student attitudes toward school and success are positive (Carpenter and Fleishman 1987).
- when student peers plan to go to college (Carpenter and Fleishman 1987; Davis and Kandel, 1981).
- when neighborhood socioeconomic status is higher (Sewell and Armer 1966).
- When high school socioeconomic or academic status is higher (Nelson 1972).
- when a college preparatory curriculum is taken in high school (Conklin and Dailey 1981).
- when teachers encourage college attendance (Portes and Wilson 1976).
- when school counselors encourage college attendance (Conklin and Dailey 1981).
- when perceived economic benefits of college are high (Hossler 1982).

There are a number of more complex, interactive, or less well understood effects of certain factors on college aspiration formation which need to be considered in greater detail. This is critical for appropriate interpretation and effective application of the above generalizations to the student marketing and recruitment process.

TABLE 2

COLLEGE ASPIRATION FORMATION STUDIES

		VARIABLES																			
		RACE	PMAR	SFAM	FED	MED	FOCC	INC	APT	ACH	PENC	DISC	SELF	ATT	PEERS	NSTAT	HSTAT	CPREP	TENC	CENC	ECON
STUDIES	**YR**																				
Alexander/Eckland	75				X	X	X		X												
Blau/Duncan	67				X		X														
Carpenter/Fleishman	87								X	X	X			X	X						
Conklin/Dailey	81			X		X	X		X		X				X			X		X	
Davies/Kandel	81				X	X	X			X	X				X						
Hauser, et. al.	76				X	X	X	X	X	X	X				X		X	X	X		
Hossler	82																				X
Kerckhoff/Campbell	77			X	X		X		X	X		X									
Nelson	72				X	X			X	X							X				
Portes/Wilson	76				X	X	X	X	X	X	X		X		X				X		
Sewell/Armer	66				X	X		X	X							X					
Sewell/Hauser	76				X	X	X	X	X	X	X				X				X		
Sewell/Shah	67				X	X	X	X	X												
Sewell/Shah	78				X	X		X	X		X										
Stage/Hossler	89		X		X	X		X			X										
Tuttle	81	X			X	X		X	X	X											

VARIABLE DEFINITIONS:

A. Family Background
- RACE = the student's race, white or nonwhite
- PMAR = the student's parents are married
- SFAM = size of the student's family
- FED = educational attainment of the student's father
- MED = educational attainment of the student's mother
- FOCC = occupational status of the student's father
- INC = income of the student's family
- PENC = parental encouragement to attend college
- SELF = self esteem of the student

B. Academic Ability
- APT = the academic aptitude of the student
- ACH = the academic achievement of the student in school

C. High School and Neighborhood Context
- PEERS = the college going plans of friends
- NSTAT = the socioeconomic status of the student's neighborhood
- HSTAT = the socioeconomic and academic status of high school
- DISC = disciplinary problems of the student in high school
- ATT = student's attitudes toward school and success
- CPREP = a college preparatory curriculum in high school
- TENC = teacher encouragement to attend college
- CENC = counselor encouragement to attend college
- ECON = the economic benefits of college attendance

Contradictory findings about family size

While Conklin and Dailey (1981) found that college aspiration formation is directly related to the size of a potential student's family, Stage and Hossler (1989) found that the extent to which parents save for and talk about college is related inversely to the number of their children currently attending college. Also, Bishop (1977) found that the probability of college attendance is related inversely to the number of siblings a potential student has.

However, Bishop (1977) used controls for institutional and environmental factors in his model, and Conklin and Dailey's (1981) study measured and used controls to test the effects of the most student characteristics. Clearly, more research is needed before one can reach a dependable conclusion about this relationship. A dependable conclusion about the effect of family size on college aspiration would be of great practical importance for market segmentation and possible enhancement of recruitment yield.

Parental encouragement

In spite of the statistically significant effects on college aspiration formation of the above factors, "parental encouragement" has emerged consistently as the most influential. Sewell and Shah (1978) examined the effect on college aspiration formation of student socioeconomic status, aptitude, and parental encouragement. The socioeconomic status variable was a composite of factors: parental education, family income and wealth, funds available for college, and the degree of sacrifice college expenditures would cause.

They found that student reports regarding amount of parental encouragement was more important than any other factor when it came to influencing the formation of college aspirations. A review of related literature reached a similar conclusion (Spenner and Featherman 1978, p. 392). Another report made what is clearly a suggestion for parents to start early to promote college aspiration in children:

> *Parental encouragement is a powerful intervening variable between socioeconomic class background and intelligence of the child and his educational aspirations. . . . Because parental encouragement is a social psychological variable, it is presumably subject to modification by means of counseling directed at parents or parents and children, whereas*

the child's intelligence and family socioeconomic status are likely to be more difficult to influence at this point in the child's development (Sewell and Shah 1978, p. 571).

The interpersonal influences of significant others on college aspiration were investigated creatively by Davies and Kandel (1981) in a study of 762 matched adolescent parent best friend triads. They found that parental aspirations for their children were more influential than peer aspirations in shaping their child's college plans. Both self reported parental aspirations and adolescent perception of parental aspiration had important effects on college aspiration. While adolescent perceptions of parental aspirations were more important than self reported parental aspirations, the former were directly influenced by the latter.

Of course, parental aspirations were determined partially by socioeconomic status and their child's academic achievement. In their model, the

direct effects of parental aspirations [on adolescent college aspirations] are stronger than the effect of any other variable . . . [but] . . . are approximately equal to the standardized effects of academic performance (Davies and Kandel 1981, p. 373).

Conklin and Dailey (1981) studied the effects of parental encouragement on college plans in a longitudinal design. They questioned high school students during their freshmen, sophomore, and senior years. They were interested particularly in the timing, nature, and consistency of parental encouragement to attend college over the high school years.

A particular innovation of their study was the use of a "taken for granted" (TFG) variable. Students were asked the following question in the 9th, 10th, and 12th grades:

Would you say that in your home it has been just about taken for granted that you will continue your education after you get out of high school? (Conklin and Dailey 1981, p. 256).

Responses could be TFG and consistently positive ("yes" at all three points in time); TFG but consistently negative ("no" all three times); or MIXED ("yes," "no," or "don't know"

responses at different times). Of those answering "yes" consistently, 90.2 percent ended up attending college. Of those answering "no" consistently, only 21.6 percent attended college, while of those with mixed responses, 55.4 percent attended college (p. 257).

The most recent study of college aspiration formation is a study of 9th graders and their parents (Stage and Hossler 1989). The researchers found that in determining a potential 9th grader's postsecondary educational aspiration, "parents' expectations (p. 301) was the strongest positive influence on students' aspiration for both males and females" (p. 308).

The standardized path coefficients for this factor were at least five times as great as any other factor in their model. An additional noteworthy feature of the study was the researchers' attempt to model what factors lead parents to save for college. Although they did not find this variable to be significantly related to early educational aspiration formation, it may be that parental saving behavior at that time still may be related to the probability of attendance at a later date.

Since this is an important beginning of what could become an important piece in the puzzle of college choice behavior, more research in this area should be strongly encouraged.

Practical implications. Perhaps the main implication of research on parental encouragement and college aspiration is that it is so important that we must strive to find new ways of early intervention into the college aspiration formation process. These should focus on influencing parental aspiration, expectation, and encouragement regarding their children's college plans. How many potential students would be going to college if it were not for the lack of this critical parental aspiration and encouragement?

Contextual factors: neighborhood

Both the status of a student's neighborhood and the status of his or her high school are directly related to the formation of college aspirations (Nelson 1972; Sewell and Armer 1966). However, these relationships are somewhat complex and involve interactions among several other variables. Researchers hypothesized that

> *the socioeconomic status of the high school district—since it presumably reflects the shared norms and aspirations of*

its members—would have an important effect on the educational aspirations of its youth over and above that of family socioeconomic status or individual ability (Sewell and Armer 1966, p. 162).

The researchers found that when sex, intelligence, and individual socioeconomic status are controlled for, the variation in college aspiration explained by neighborhood status was positive, but rather small because it interacted with the other variables related to college aspiration formation. They explained that

lower status neighborhoods also have a disproportion of females, students from lower socioeconomic status families, and students of lower measured intelligence [and] each of these would tend to reduce the proportion of those planning on college (Sewell and Armer 1966, pp. 163–4).

. . . the variables which appear to affect aspiration formation among blacks . . . are factors which can be influenced by focused, early, and continuous intervention.

Of course, the effect of being female on college aspiration formation has changed since that study was conducted. To recognize this, one need only note that there are now more women than men attending college.

A more comprehensive model found that when controls are used for family socioeconomic background, academic ability, sex, college preparatory curriculum, and class rank, the effects of the high school attended still were positive and significant. However, when "significant others' influence [parents, teachers, and friends] is added to the equations for aspirations and attainment, the net effects of schools are reduced to statistically insignificant contributions" (Hauser et al. 1976, p. 322).

It is noteworthy that an analysis of the effects of high school status has brought us back to an emphasis on the importance of parental encouragement in the process of forming college aspirations.

Race and its effect

In addition to the general finding that blacks are less likely than whites to aspire to attend college (Tuttle 1981), there appears to be an interesting interaction between race and the causal pattern by which college aspirations are formed. Variables which appear early in the causal sequence are useful for explaining the formation of college aspirations among

whites, while blacks seem to rely more exclusively on variables which appear later in the causal sequence of aspiration formation (Kerckhoff and Campbell 1977; Portes and Wilson 1976).

Essentially, whites seem to be influenced by all of the early factors and some of the later ones, while blacks appear to be influenced by none of the early factors and all of the later factors. For example, Portes and Wilson (1976) found that while socioeconomic status factors and academic aptitude are related directly to the educational aspirations of whites, they are unrelated to the educational aspirations of blacks.

College aspirations among blacks were related directly to academic achievement in school, the influence of significant others (parents, teachers, and friends), and self-esteem. Achievement and significant others' encouragement, but not self-esteem, were important in determining educational aspiration for whites.

Practical implications

The most important implication of the findings is that the variables which appear to affect aspiration formation among blacks (achievement in school, encouragement of significant others, and self-esteem) are factors which can be influenced by focused, early, and continuous intervention. Our educational system can and should influence high school achievement, encouragement by significant others, and self-esteem to encourage both blacks and whites to desire to attend college.

Clearly, these are areas in which teachers, parents, counselors, and college recruiters have a chance to make a difference.

Search and Application

Sometime after college aspirations are formed, students enter the phase of the college choice process which may be referred to as "search and application." In this phase, potential students begin to seek and acquire information about colleges they may consider attending. They seek information regarding those institutional characteristics that are particularly important to them in determining which colleges to consider.

They seek and acquire such information from what they perceive to be the most dependable, and therefore trustworthy, sources. Search and application behaviors are carried

out according to a somewhat predictable timing sequence and with varying degrees of commitment, depth, and breadth of effort.

This phase ends when a student has decided to apply to certain particular institutions, often called the application, or "choice set" (Jackson 1982, p. 239). These institutions can be characterized in terms of such attributes as selectivity, cost, distance from home, control (public or private), level (two-year or four-year), and size.

In the final phase of the college choice process—selection and attendance—students apply evaluation criteria to choose one institution from their choices at which to matriculate.

But, as a researcher reminds us, during the search and application phase, while students are searching for institutions, institutions are searching for students. During the 1970s and 1980s, the "emphasis in admissions" has shifted from "selection" to "recruitment" (Chapman 1981, p. 491). For effective recruitment, enrollment managers need to have a firm grasp of the timing and nature of the search process, which information sources are preferred, and which institutional characteristics are most important when a student decides which college or colleges to apply to.

This section of the report examines among other items the nature of these processes and factors in general, as well as the ways they vary according to individual student characteristics. An effective marketing mix for a college involves developing and offering an attractive product, effectively communicating and promoting its attributes, and delivering it in appropriate places at acceptable prices (Kotler and Fox 1985, pp. 153–154; Litten et al. 1983, p. 15).

Student characteristics can serve as bases for market identification and segmentation so that a college can tailor and target its marketing mix to the particular student markets it wishes to serve effectively.

While the *search and application phase* probably has received the least research attention of the three phases (Hossler, Braxton, and Coopersmith 1989, p. 249), students eliminate many institutions from consideration in this phase. In fact, Jackson calls this phase the "exclusion" phase (1982, p. 239). For this reason, as well as the fact that it is a period of great potential for information exchange and interaction between institution and student, it may well be that "the most critical phase is the search phase. The best way for institutions

to expand their applicant pool is to reach students at the search phase" (Hossler and Gallagher 1987, p. 218).

The search and application phase will be examined from four different perspectives. These include the timing and nature of the process, the institutional characteristics or attributes considered important by students, preferred information sources, and the characteristics of the institutions chosen. The studies consulted here are broad in scope in the sense that their databases and findings are not institution specific.

Understanding Search and Application

Understanding the timing and nature of students' college search processes is important in formulating guidelines for the effective timing and tailoring of the promotion of a college's marketing mix.

Gilmour et al. (1978) interviewed high school seniors and college freshmen in Pennsylvania. While students' earliest thoughts about attending college began for most when they were in grade school, the decision to go to college was made primarily in either the sophomore or junior year of high school (p. 14). Probably as a result of the PSAT exams in the fall, or the SAT exams in the spring, 72 percent of the students began to develop "college lists" during their junior year (p. 16). For 66 percent of the students, the actual application process began in the following fall (p. 20).

A longitudinal study of the search and application process included an interview of high school seniors every other week throughout their senior year. The study described the search and application process in terms of "alternatives" (institutions), "factors" (institutional characteristics or attributes), and "generators" (information sources) (Lewis and Morrison 1975, pp. 7–8).

Nine of 13 college choice activities related to the search and application phase: consult source; source provides new school; source provides information; evaluate source effectiveness; add school; drop school; add factor; evaluate school; apply to school.

Student characteristics

Some researchers report differences in the timing and nature of search and application have been observed by race, sex, and aptitude of the student. Blacks request more information, consult more information sources, consider more institutions

and more institutional characteristics than whites (Lewis and Morrison 1975, p. 41). Women start and finish the search and application process earlier, and make more applications than men (Lewis and Morrison 1975, p. 41). Students with higher aptitude begin thinking about college earlier, apply earlier, and consider a larger number of schools (Gilmour et al., 1978, pp. 16–22).

Institutional characteristics

Clearly, the timing of the college student search process offers important guidance for the tailoring of a college's marketing mix promotion. However, an understanding of which institutional characteristics are most influential in determining which colleges students apply to offers important guidelines for the development of the programs, prices, and places which make up an optimum marketing mix for attracting desired students.

Probably the most comprehensive and generalizable study in this area is the major survey of 3,000 high school seniors in six large metropolitan areas conducted by Litten and Brodigan (1982). They asked students to examine a list of 25 institutional characteristics and gave them the following instruction:

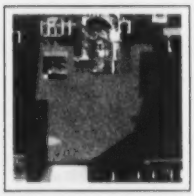
From the list of institutional characteristics listed below, please rate them according to their importance to you in deciding which colleges or universities you have applied to or will apply to (Litten and Brodigan 1982, p. 248).

By drawing the students' attention specifically to the application process, the researchers focused the question and the responses on those particular institutional characteristics considered important during the search and application phase of the choice process. Students responding gave highest ranking to financial, fields of study, general academic reputation, location, social atmosphere, faculty teaching reputation, academic standards, and careers to which college might lead (Litten and Brodigan 1982, p. 250).

Although different terminology was used, those findings are quite consistent with those of earlier studies. For example, Lewis and Morrison found six characteristics most frequently utilized to evaluate institutions: special academic programs,

cost, location, size, general reputation, distance from home (1975, pp. 29–30).

Another researcher found that the most important college attributes throughout all of the phases of the college choice process were cost, location, programs, and quality (Gilmour et al. 1978, pp. 19–22).



Based on a survey of students at six Milwaukee high schools, Murphy found the most important attributes to be academic reputation, cost, location, distance, and size (1981, p. 146). More than 1,000 high school students were surveyed in Pennsylvania and New York. The seniors were asked to list their most important reasons for selecting an institution of higher education. The factors receiving the highest rating were academic reputation, educational programs, relatives, financial assistance, and distance from home (Leslie, Johnson, and Carlson 1977, p. 283).

Probably the four institutional characteristics of pivotal importance in the college search process are programs, quality, cost, and location (Ihlanfeldt 1980, p. 31).

Institutional characteristics: student variations. Some evidence indicates that the most important institutional characteristics in the search and application process vary according to a number of student characteristics.

Sex. Lewis and Morrison (1975) observed that while women tend to cite the most important characteristics (above) with relatively equal frequency, men are more likely to emphasize programs or costs (p. 41). Women also are more likely than men to rate residential life as important (Litten 1982, p. 391).

Race. Blacks tend to consider a broader range of characteristics than whites when evaluating institutions. They also tend to emphasize the importance of costs much more than whites (Lewis and Morrison 1975, p. 38). Blacks also show more interest in the social background of students at a college, and are "more likely than whites to rate financial aid as very important (Litten 1982, p. 390).

Parental educational level. Students whose parents have high educational attainment are more likely to emphasize the importance of programs and high academic standards, and less likely to show concern about costs (Gilmour et al. 1978,

pp. 20, 22, 25; Litten and Brodigan 1982 p. 256). Also, the "higher the level of parental education, the greater the interest in the social backgrounds of students . . . and in extracurricular activities," while lower parental education is associated with more interest in "rules and regulations affecting students, and the careers to which the college might lead" (Litten 1982, p. 395).

Income. Low income students tend to rate "financial assistance" as significantly more important than either middle or high-income students (Leslie, Johnson, and Carlson 1977, p. 283). A "higher proportion of low income than middle and high-income students cite aid as being instrumental in their college attendance plans" (p. 280).

Parental preferences. The preferences of students' parents regarding the importance of certain college attributes have a strong influence on the role of institutional characteristics in the search and application process, a researcher observed. Parents

> *generally defined the cost, geographic, and quality boundaries within which [their children] were to remain in making their college selection. . . . [and] this boundary setting had a subtle but pervasive effect throughout . . . the college selection process* (Gilmour et al., p. 15).

Religion. Religious preference appears to influence the perceived importance of some college characteristics. For example, Catholics tend to indicate a relatively higher interest in financial concerns and a lesser concern for academic standards. Members of the Jewish faith tend to show much less than average interest in, or concern with, finances (Litten and Brodigan 1982, p. 256).

Ethnic background. Region of a student's origin also seems to have a bearing on which attributes are most important. Mid westerners show greater concern for financial matters than students from either coast, and Easterners are particularly concerned about academic standards issues (Litten and Brodigan 1982, p. 256).

Academic ability. The higher the academic ability of a student, the greater the concern about academic standards, program offerings, and awareness of "net cost" rather than just "price," and the lesser the concern about career outcomes, campus appearance, and financial matters (Litten 1982, pp. 392–393; Litten and Brodigan 1982, p. 256). There is also some evidence that high ability students tend to have much broader geographic limits regarding the search and application process (Gilmour et al. 1978, p. 19; Zemsky and Oedel 1983, p. 34).

Information sources

Effective student marketing and recruitment requires that the most important institutional characteristics in a college's marketing mix be clearly and effectively communicated to desired students in target markets. To promote the college's marketing mix effectively, it helps if college officers are aware of how students' prefer to receive information.

The six market study of Litten and Brodigan identifies the most preferred information sources for both students and parents in the search process. It also links these preferred sources to each of the eight college attributes which the study rated as most important (1982, pp. 252–254).

Table 3 lists the eight college attributes which the study rated as most important in the search and application process. Parents and students identified the same factors as important. They agreed on the order of the first two—financial and fields of study offered—but did not agree on the order of importance for the remaining five attributes.

Table 3 presents a number of noteworthy features. First, with only one exception, students and parents identify the same six most preferred information sources: admissions officers, college publications, high school counselors, commercial guides, alumni, and college students. The one exception is that parents would add college faculty to the preferred list and students would not.

Second, except for teaching quality and academic standards, students and parents identify the same preferred information sources about each college attribute.

Third, parents are more likely to seek advice from alumni about teaching quality, while students prefer to rely on high school counselors.

Fourth, parents are twice as likely as students to identify faculty as a preferred source of information about academic

TABLE 3

PREFERRED INFORMATION SOURCES BY COLLEGE ATTRIBUTE

College Attributes	Preferred Information Sources: Students	Preferred Information Sources: Parents
1. Financial	Admissions Officer College Publications	Admissions Officer College Public.
2. Fields of Study	College Publications Admissions Officer	College Public. Admissions Officer
3. Academic Reputation	H.S. Counselor Commercial Guides Alumni	H.S. Counselor Commercial Guides Alumni
4. Teaching Quality	H.S. Counselor College Students	Alumni College Students
5. Academic Standards	H.S. Counselor College Students	Alumni Admissions Officer College Faculty
6. Location	College Publications College Students	College Public. College Students
7. Social Atmosphere	Alumni College Students	Alumni College Students
8. Careers Available	Alumni Admissions Officer	Alumni Admissions Officer

standards, while students prefer to discuss this with high school counselors.

Fifth, the important college attributes most widely cited in the literature—cost, programs, quality, and location—correspond to attributes 1 through 6 from the above list. With the exception of quality concerns, students and parents agree on their most preferred information sources (Litten and Brodigan 1982, pp. 251–255).

Litten and Brodigan's excellent contributions have two particularly important practical implications.

1. Since much evidence indicates that both students and parents take on consumer roles in college-going decision-making (Murphy, 1981), it is important for effective student marketing and recruitment to understand what information sources are preferred regarding each attribute by both students and parents.

Since both groups take part in consumer decision-making, enrollment managers must be prepared to communicate and clearly represent the most important attributes of their marketing mix using the most preferred and effective information sources for each group. This study provides fundamental guidelines for effectively communicating appropriate information by appropriate means to each group.

2. This is the only major study which has differentiated among the most preferred information sources for each of the most important college attributes in the search and application process.

Enrollment managers now have guidance regarding which information sources are likely to be the most effective media for presenting and promoting each of the distinct features of their marketing mix of college attributes.

Readability of media sources. College publications appear to be among the most preferred sources of information. For these to be accurate and effective information media, the reading level should be consistent with that of the typical college-bound, high school senior. Also, the terminology used to explain academic, admissions, and financial aid policies should be readily understandable.

Johnson and Chapman (1979) examined the reading level and understandability of terminology in 42 college catalogs selected through a random sampling procedure according to institutional type. They found that the average level of reading in the catalogs "was appropriate to an advanced college student or college graduate" (pp. 313-314). When compared to national norms,

> *catalogues from all types of institutions are written at a level too difficult for their clientele. . . . [and/ research university catalogues were significantly more difficult than those of the liberal arts colleges* (Johnson and Chapman 1979, p. 314).

The authors also observed that

> *students are often unfamiliar with the meaning of the special vocabulary used by those who write admissions mate-*

rials . . . [and] suggest that colleges need to examine their recruitment literature for its level of presentation, as well as for its content" (pp. 316, 318).

Other studies of information sources have resulted in findings generally consistent with those of Litten and Brodigan (1982). Leslie, Johnson, and Carlson found the five most preferred sources of information about college attributes were college publications, admissions officers, parents, college students, and high school counselors (1977, p. 283).

Eight information sources which students indicate they most frequently rely on were identified in another study. These included writing for information, campus visits, high school counselors, college publications, college students, admissions officers, parents, friends (Lewis and Morrison 1975, pp. 27-28).

Gilmour et al. observed frequent student use of the following four sources: high school counselors, commercial guides, campus visits, writing for information (1978, pp. 16, 20).

The studies seem to suggest that, in general, the most preferred sources of information about college attributes in the search and application phase include admissions officers, college publications, high school counselors, alumni, college students, commercial guides, campus visits, and parents. Some evidence indicates that the preferred information sources may vary according to some student characteristics including sex, race, parental education, income, and academic ability.

While men and women utilize college catalogs and campus visits with similar frequency, women tend to seek the advice of college students more than men do, while men rely more on high school counselors than women do (Lewis and Morrison 1975, pp. 40-41). Blacks appear to consult a greater variety of information sources than whites do. Also, the priorities they hold with respect to the most preferred information sources differ as indicated in the following lists:

Blacks appear to consult a greater variety of information sources than whites do.

PREFERRED INFORMATION SOURCES

Blacks	**Whites**
Campus Visits	Writing for Information
Admissions Officers	Campus Visits
Writing for Information	High School Counselor
College Students	College Catalogs
College Catalogs	Parents

Two particular points of interest in this comparison are that blacks tend to acquire more information than whites directly from colleges through either campus visits or visits by admissions officers to high schools. Blacks also receive less information than whites from high school counselors and parents. The relative reliance on parents for information is directly related to the educational attainment of the student's parents (Lewis and Morrison 1975, pp. 36–37).

Students with higher levels of parental education tend to rely more on their parents for information and less on high school counselors. Such students also are more inclined to use commercial guidebooks, campus visits, admissions officers, and alumni. Students with lower parental education depend more on the advice of high school counselors and unrequested publications (Gilmour et al. 1978, pp. 16, 20; Litten 1982, pp. 393-394). Students at higher income levels also tend to depend more on their parents for information, while lower income students more often consult with high school counselors (Leslie, Johnson, and Carlson 1977, p. 283).

Attributes of student college choices: student variations

During the search process, students often follow predictable timing and activity sequences while acquiring information about important college attributes from preferred sources. From these they form a "choice set" of institutions to which they will apply. There is now considerable evidence that specific characteristics of the chosen institutions interact with and vary according to various student characteristics.

If college officers understand the relationships between student and institutional characteristics and how they form student choices, they can develop more effective communication and promote a more appropriate marketing mix to the most desired students in target markets. Ultimately this can enhance student-institution fit.

This section reviews and integrates the findings of a number of studies which have found significant relationships between various sets of institutional and student characteristics.

The following institutional characteristics:

selectivity (quality), cost, distance from home, control (public, private), and level (two year, four year),

have been found to have significant relationships with the following student characteristics:

sex, race, parental education, income, parental encouragement, aptitude, achievement, college preparatory high school curriculum, and college aspirations.

One of the first researchers to conduct a comprehensive investigation of the relationships between student and institution posed the question as follows:

> *Students' applications tend to resemble each other . . . [and] this homogeneity permits me to ask whether a student's typical application—defined here as a construct college with characteristics equal to the mean of the applicant's choices' characteristics—is related to his or her other characteristics* (Jackson 1978, p. 561).

Studies regarding application to or attendance at highly selective institutions, high cost institutions, institutions at greater distances from home, private or public institutions, and four year or two year institutions, reveal the following five general relationships.

1. *An individual is more likely to apply to, or attend, a more highly selective institution when:*

- the student is male (Hearn 1984).
- the student is white (Rosenfeld and Hearn 1982).
- students' parents have greater educational attainment (Tierney 1984; Zemsky, Shaman, and Berberich 1980).
- student family income is greater (Jackson 1978; Zemsky and Oedel, 1983).
- student academic aptitude is greater (Hearn 1984).
- student academic achievement is greater (Zemsky, Shaman, and Berberich 1980).
- the student followed a college preparatory curriculum in high school (Jackson 1978).
- student educational aspirations are higher (Zemsky and Oedel 1983).

2. *An individual is more likely to apply to, or attend, a high cost institution when the:*

- student is female (Hearn 1984).
- student is not white (Hearn 1984).

- students' parents have greater educational attainment (Hearn 1984; Tierney 1984).
- student's family income is greater (Hearn 1984; Zemsky and Oedel 1983).
- student's academic aptitude is greater (Jackson 1978; Tierney 1984).
- student academic achievement is greater (Hearn 1984; Zemsky and Oedel 1983).
- student followed a college preparatory curriculum in high school (Jackson 1978).
- student educational aspirations are higher (Hearn 1984).

At this point it seems worthwhile to "hear and see" what several prominent scholars have observed about the findings in these studies. As Jackson points out, the relationships lead one to think that "students preselect colleges, which limits the extent to which college characteristics can change students' minds" (1978, p. 561). Another researcher develops this hypothesis more fully:

> *The basic themes of students' institutional choices may very well be established far in advance of actual college applications . . . [and] student and parent perceptions, attitudes, and knowledgeability about college attendance and costs may take on distinctive shapes for different classes and races as early as the tenth grade, and those differences may, in turn, produce differences in families' specific planning activities regarding college* (Hearn 1984, p. 29).

Zemsky and Oedel express the concept succinctly in saying, "Our own experiences, our conversations with admissions officers, and the data we have derived . . . all point to a single conclusion: the patterns of college choice are stitched deeply into the social and economic fabric of the nation" (1983, p. 44).

The ultimate implications, or result, of the "preselection" hypothesis from a sociological perspective may be that "in the high school to college transition, the academically and socioeconomically 'rich' become richer (i.e. attend schools having superior intellectual and material resources), while the academically and socioeconomically 'poor' become poorer" (Hearn, 1984, p. 28).

Of course, much research has indicated that institutional characteristics do influence student college choice behavior. Their influence still may be limited with respect to some students' behavior due to the pervasive influence of socioeconomic and academic background factors on college aspiration formation and the search and application phases of the college choice process. In spite of Jackson's "preselection" hypothesis, his research led him to conclude that one institutional characteristic able to modify such patterns of predestination in college choice "is the award of financial aid" (1978, p. 567).

It also is interesting to observe that ascriptive characteristics, such as sex and race, reduce the likelihood of a student applying to and attending highly selective institutions. However, they do not reduce the likelihood that students will apply to and attend high cost institutions (Hearn 1984, pp. 25, 27).

Some possible explanations for this may be that (a) females are more likely than males to obtain scholarships when their incomes are low, (b) nonwhites have a greater chance of getting scholarships at all income levels and at all but the highest G.P.A. levels, and (c) scholarship awards are more often made to reduce financial burdens of college than to reward high school academic achievement (Blakemore and Low 1983, pp. 510-511).

3. *An individual is more likely to apply to and attend an institution located a greater distance from home when the:*

- student is male (Rosenfeld and Hearn 1982).
- student's parents have greater educational attainment (Tierney 1984).
- student family income is higher (Gilmour et al. 1978).
- student academic aptitude is higher (Ihlanfeldt 1980).
- student academic achievement is higher (Zemsky, Shaman, and Berberich 1980; Zemsky and Oedel 1983).
- student educational aspirations are higher (Zemsky and Oedel 1983).

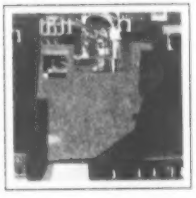
4. *An individual is more likely to apply to and attend a private institution rather than a public institution when the:*

- student is female (Rosenfeld and Hearn 1982).

- student's parents have greater educational attainment (Tierney 1984; Zemsky and Oedel, 1983).
- student's family income is higher (Zemsky, Shaman, and Berberich 1980).
- student academic aptitude is higher (Ihlanfeldt 1980; Tierney 1984).
- student academic achievement is higher (Zemsky and Oedel 1983).
- student educational aspirations are higher (Zemsky and Oedel 1983).

5. *An individual is more likely to apply to and attend a four-year institution when the:*

- student's parents have greater educational attainment (Zemsky and Oedel 1983).
- student family income is higher (Zemsky and Oedel 1983).
- student's parental encouragement is stronger (Conklin and Dailey 1981).
- student academic aptitude is higher (Bowen 1982; Zemsky and Oedel 1983).
- student educational aspirations are higher (Zemsky and Oedel 1983).



Implications for marketing

A college's marketing mix is made up of the nature and quality of products, the communication and promotion of the attributes of its products, the times and places it offers them, and their prices. This section of the report has several aims: It identifies product attributes and the sources of promotional information that are most important to students in the college choice process, explains the ways product attributes and information sources vary according to specific characteristics of students, and analyzes the ways in which the critical characteristics of colleges vary according to specific student characteristics.

Understanding the relationships is very important for effective student marketing and recruitment, which is essentially a process of generating exchanges of value between students and a college. Effective and appropriate exchange takes place when students perceive that the particular marketing mix offered by a college has the potential to help them meet

important personal and professional goals. A greater understanding of these general relationships can guide a college toward a better understanding of how students with specific characteristics in the college's current markets are likely to assess the various components of the college's current marketing mix.

Do the characteristics of the students a college is currently trying to recruit indicate that they are likely to be attracted to the characteristics of the college's current marketing mix? If there is a significant mismatch, then the college must either: (a) seek students with characteristics indicating that they will be attracted to characteristics of the current marketing mix, or (b) adjust the marketing mix so that it will be attractive to students possessing the attributes it would prefer to see in its student body. No college can be all things to all people, but each college must seek to be all things to some people (Grabowski 1981, p. 16).

Selection and Attendance

Sometime after potential students have applied to and been accepted by the colleges of their choice, they evaluate the institutions on their acceptability in terms of the college attributes most important to them. The important socioeconomic, academic, and contextual background characteristics of students (which had a pervasive influence on the formation of their college aspirations) influenced and interacted significantly with institutional characteristics, almost to the point of preselection, in determining student college choices.

In the selection and attendance phase, these student characteristics remain important as they "play a role in students' rating schemes, largely by serving as criteria for evaluating" the attributes of colleges as students make their choices (Jackson 1982, p. 241). At this stage of the college choice process, students' ratings of college attributes are the "deciding factors" in selecting one institution to attend.

> *Thus, the enrollment decision is interactional, depending on both the attributes of the student and the characteristics of the institutions the student perceives to be in his or her choice set* (Hossler 1984, p. 32).

Studies of this final phase of the college choice process usually have been conducted from the perspective of individual

colleges seeking to determine which institutional attributes are significant in distinguishing between those admitted applicants who matriculate and those who do not. They rely on institution specific databases often developed by the college's institutional research or admissions offices. Maguire and Lay explain that such research is best conducted "by analyzing college choice for one school, with a set population of accepted applicants and at a single point in time, the time of final college choice" (1981, p. 124).

Table 4 summarizes the findings of 10 representative studies regarding which frequently cited college attributes significantly distinguished between matriculation and nonmatriculation at particular institutions in the final selection and attendance phase of the college choice process. These studies were selected because of their representativeness and the comprehensive breadth of methodological approaches represented among them. They also examine student college selection behavior at a variety of institutions including Boston College, Carnegie Mellon, Carleton College, Mid-City College, seven Ohio universities, Northeastern University, Tufts University, nine New York area colleges and universities, Rutgers, and John Carroll University.

In the studies, the attributes which were found most often to determine where students decided to enroll included the following:

1. Cost (Kuntz 1987; Terkla and Wright 1986).
2. Financial Aid (Seneca and Taussig 1987; Welki and Navratil 1987).
3. Programs (Maguire and Lay 1981; Perry and Rumpf 1984).
4. Size (Dembowski 1980; Litten 1979; Seneca and Taussig 1987).
5. Location (Cook and Zallocco 1983; Kuntz 1987; Terkla and Wright 1986).
6. Quality (Dembowski 1980; Litten 1979; Welki and Navratil 1987).
7. Social Atmosphere (Kuntz 1987; Perry and Rumpf 1984; Terkla and Wright 1986).
8. Athletics (Maguire and Lay 1981; Welki and Navratil 1987).
9. Religious Emphasis (Kuntz 1987; Maguire and Lay 1981).
10. Jobs Available (Perry and Rumpf 1984; Welki and Navratil 1987).

TABLE 4

SELECTION AND ATTENDANCE STUDIES

		COLLEGE ATTRIBUTES									
		COST	FINAID	PROGRAMS	SIZE	LOCATION	QUALITY	SOCIAL	ATHLETIC	RELIGION	JOBS
STUDIES	**YR**										
Cook/Zallocco	83					X	X	X			
Chapman, R.	79	X	X		X		X				
Dembowski	80				X	X	X				
Kuntz	87	X				X	X	X		X	
Litten	79				X	X	X	X			
Maguire/Lay	81		X	X	X	X	X	X	X	X	
Perry/Rumpf	84	X	X	X				X			X
Seneca/Taussig	87	X	X		X	X	X				
Terkla/Wright	86	X	X	X	X	X	X	X			
Welki/Navratil	87	X	X	X	X	X	X	X	X	X	X

The methodologies employed in these studies included multiple regression, logit and probit estimation, multidimensional scaling, rank-order correlation analysis, factor analysis, and discriminant analysis. These statistical procedures were used to examine the relationship between the matriculation or attendance decision and student ratings or other measures of college attributes.

Market Research and Its Role

Since this report is limited to the study of student enrollment behavior and the college choice process, it does not cover specific marketing, admissions, and recruitment activities and tactics. However, it is through the process and techniques of academic market research that student enrollment behavior is studied from the perspective of individual institutions. This qualifies market research as an essential and important topic which is consistent with this report's purpose.

Many colleges have come to realize that effective application of the marketing concept depends heavily on the well-planned process of data collection and analysis called "market research" (Lay and Endo 1987). Using an office of institutional research can facilitate the implementation of an appropriate

academic market research process (Davis Van Atta and Carrier 1986). Hossler places the process of institutional research at the very top of his model of an "enrollment management system" (1984, p. 145).

What are some common ways in which institutions have successfully implemented academic market research procedures? This section of the report tells how these have been used to identify student markets and their competition, to investigate institutional image and relative market position, and to determine which college attributes best discriminate between matriculants and nonmatriculants among its applicants.

Market research in practice. Appropriate questionnaires to admitted applicants can provide much of the information needed for investigations on a college's market segments, competition, image, and market position. Although there are many outstanding questionnaires currently in use, good illustrations of this type are presented in Litten, Sullivan and Brodigan (1983, pp. 264–73) and Ihlanfeldt (1980, pp. 41–6).

The application of various forms of *Automatic Interaction Detector* (AID) procedures has made a most impressive contribution to the practice of market segmentation in the 1980s (Wakstein 1987). For example, Lay, Maguire, and Litten (1982) applied this routine to Boston College data on a variety of student characteristics as well as the students' ratings on 22 attributes of the college. These student characteristics and student ratings of college attributes become variables which can divide students into higher and lower admissions yield groups, or market segments.

AID is a repeating procedure that begins with all admitted applicants and then segments and further segments the students into increasingly detailed subsets according to a specified criterion. At Boston College the criterion required selecting the segmentation variable at each repetition so it could maximize the admissions yield differences between groups, and also could split the scale of that variable at the point where it achieved the maximum differences in admissions yield between groups (Lay, Maguire, and Litten 1982, pp. 198–9).

After each repetition, the procedure generates more detailed, specific segments of admitted applicants based on complex interactions between student characteristics and stu-

dent evaluations of college attributes. Each segment is identified in terms of all the variable subsets which define it, in terms of its size, and in terms of its admissions yield (Lay, Maguire, and Litten 1982, p. 206).

As a result of the highly informative and useful AID based segmentation, market strategy development could follow either of two primary methods to

influence the number and mix of prospective applicants, find more students similar to those who presently exhibit high yield rates, or improve the yield rates of other groups through promotion, program development, pricing, or combinations of these factors (Lay, Maguire and Litten 1982, p. 203).

Boston college as a model. Using application overlap information from admissions data, Lay and Maguire (1980) identified Boston College's (BC) top 15 competitors, ranked by their number of common applicants, arranged them in three groups according to "acceptance rates" (high, medium, and low), and computed "draw rates" for each competitor.

The *acceptance rate* measures the percentage accepted at competitor schools after acceptance at BC.

- High acceptance rates mean that competitor colleges accept 70 percent or more of the students BC accepts;
- Medium acceptance rates accept between 30 and 70 percent;
- Low acceptance rates accept 30 percent or less of the students BC accepts.

The *draw rate* is an adjusted ratio of the number of students choosing BC after being accepted at both BC and a competitor, divided by the number choosing a competitor after being accepted both there and by BC (Lay and Maguire 1980, p. 56).

BC outdraws the six colleges in the "high acceptance" category by more than two to one, indicating that these may be "safety valve" colleges for students preferring BC. However, the three competitors in the "low acceptance" group greatly outdraw BC, suggesting that BC may be the safety option for these colleges.

Finally, in the "medium acceptance" category, some of the six colleges do, and some do not, outdraw BC. These are its

The application of various forms of* Automatic Interaction Detector *procedures has made a most impressive contribution to the practice of market segmentation in the 1980s.

closest competitors. While comparison with the six colleges in the "high acceptance" category shows BC's strengths, the college needs to improve its image with respect to the "medium acceptance" six colleges. This could help BC improve its market position regarding the college attributes most important to potential students in making the decision on where to matriculate (Lay and Maquire 1980, pp. 56–7).

Students were asked to "evaluate Boston College and another school (either their alternative choice or the school they plan to attend) on 28 attributes" (Lay and Maguire 1980, p. 54). Discriminant analysis identified seven attributes that could serve to distinguish most between students who matriculated at BC and those who did not. These were financial aid, parents' preference, academic programs, size, location, athletic facilities, and social activities (p. 58).

Comparing student ratings of the attributes for BC and its competitors suggests clearly the dimensions, or attributes, on which BC is perceived to be inferior or superior to its competitors. These can provide guides for ways BC might change its marketing mix to enhance its competitive viability (pp. 61-63).

Next, student ratings of the seven attributes for the top 25 competitors were subjected to *hierarchical cluster analysis*. The average ratings of students on all attributes serve as a description of the typical student's image of each college.

Cluster analysis merely arranges the colleges into groups (clusters) according to the similarity of their images as perceived by prospective students. An interesting outcome was that the six colleges grouped with BC were exactly the same ones identified as its closest competitors using draw rates and acceptance rates (Lay and Maguire 1980, pp. 59-60). The images and relative market positions of these institutions on the seven critical attributes can serve as useful "reference points for planning" (p. 61) for student marketing and recruitment efforts.

Carleton College and its competitors. To investigate the image and market position of Carleton compared to its competitors, a researcher examined admitted applicants' ratings of Carleton and another school (either their alternative choice or the school they plan to attend) on 23 attributes. "Each institution was rated on a three-point scale (poor, good, very

good) and the rating of the competition was subtracted from the rating of Carleton . . . for the relative ratings" (Litten 1979, pp. 70-71).

Multidimensional balance sheets were used to display Carleton's image and market position compared to its competition. Each balance sheet had a horizontal line, above and below which extended bars indicating the extent to which Carleton was rated as superior or inferior to competitors on each attribute (pp. 70-75). These balance sheets provided clear profiles of Carleton's image compared to its competition on a wide range of attributes characterizing its marketing mix. The displays provided evidence of relative strengths as well as areas where work needs to be done to improve the match or fit between Carleton's marketing mix and student preferences in selected regional markets.

At Pacific Lutheran University (PLU). In academic market research, multidimensional scaling is applied to a variety of measures of perceived similarity or dissimilarity of colleges. Leister asked samples of PLU students and members of the local League of Women Voters to rate each possible pair in a set of 12 institutions in western Washington state (probable competitors) in terms of the degree to which they perceived them to be similar or dissimilar. Multidimensional scaling procedures were applied to the similarity ratings, yielding a map which displayed and located similar institutions close together and dissimilar institutions farther apart. The map clearly showed that PLU's closest competition came from three other private universities in the state, with some additional competition from two major public universities (1975, pp. 390–1).

At Yale University. Sternberg and Davis applied the same procedures to generate a map expressing the ratings of Yale's admitted applicants and students regarding the similarity or dissimilarity of 17 institutions. They went one step farther by applying hierarchical clustering to the similarity ratings. This generated successive clusters of colleges, grouping the most similar institutions in the first trial, adding the next most similar institutions to each group in the second trial, and so forth (1978, p. 266).

Yale clustered first with Harvard; next, they were grouped with Princeton; and in the third trial Dartmouth, Brown, and

Cornell were added. These universities represent Yale's principal competitors.

A student's ideal college. Kuntz (1987) proposed that a student's most preferred college could be predicted from the degree of congruence between student ratings of attributes of various colleges and their own ratings of similar attributes at what would be that student's "ideal" college. Students were asked to provide ratings of the degree of similarity between all possible pairs of colleges, including each student's ideal, on a list of 18 college attributes. Students also were asked to rank all colleges in the particular group, expressing their preferences regarding selection of a college to attend.

Multidimensional scaling was used to determine the relative similarity or dissimilarity of students' perceptions of attributes for the colleges they chose to apply to and their ideal college. This showed the relative similarity or dissimilarity of all the colleges, including the ideal. The students' similarity ratings between each college in the group and their ideal college were found to be significantly related to students' actual rank ordering of each college according to their relative desire to attend it (Kuntz 1987, p. 20).

In his consulting work, Ingersoll (1988) developed the National Student Database as part of his efforts to help institutions examine their image. One creative approach he uses is based on what he calls the "image/fit ratio" (p. 97).

High school seniors are asked to rate various institutions on selected attributes. They also are asked to rate what would be their "ideal college" on these attributes as part of a more detailed questionnaire (Ingersoll 1988, pp. 253–61). The ratios of attribute ratings for a particular college relative to an ideal college help measure the degree of image fit (p. 98). These ratios show a college the attributes on which it is well-received by potential students, as well as the attributes they may need to examine in terms of their nature, promotion, and appropriateness.

Some studies have used the *semantic differential technique* to elucidate college images (Huddleston and Karr 1982; Sternberg and Davis 1978). Struckman Johnson and Kinsley (1985) combine the use of the semantic differential technique and the concept of the ideal college.

Three groups closely associated with the University of South Dakota (USD)—area high school students, university students,

and university alumni—were asked to rate USD and their "ideal university" on a set of scales anchored with bi polar descriptors of key college attributes. This process generated three "image profiles" of USD, one for each of the three groups. It also generated a single image profile of the ideal university for all three groups combined (Struckman-Johnson and Kinsley 1985, p. 321).

From the image profiles, the researchers were able to deter mine that the three responding groups generally rated their ideal college **higher** on nearly all attributes, but agreed that USD "is an attractive school which provides a friendly, socia ble environment, good athletic facilities and strong profes sional and graduate school preparation (p. 325). Results also showed that USD needs to improve in terms of admissions competitiveness, academic reputation, and job opportunities upon graduation.

Qualitative approaches. During the past four or five years, academic market researchers have begun to apply *focus group interviewing* to the study of institutional image. This more "qualitative" technique approaches image from a perspective which is quite different from most other techniques, and prob ably will be used with increasing frequency to complement the findings of other techniques. The nature of this technique and its merits for image and perception investigation are des cribed as follows:

> *Briefly, 'focus group interviewing' is a qualitative research technique in which a small number of respondents—generally eight to ten—and a moderator participate in an unstructured group discussion about selected subjects. A typical discussion session lasts for one to two hours. Focus group interviews elicit in depth, albeit subjective, information to help researchers understand the deeply held perceptions of student, or other, groups of policy importance to a college or university. The method is best used to identify attitudinal dimensions and not to quantify the extent to which these are held in any pop ulation or subgroup (Bers 1987, p. 19).*

Ethical Guidelines for Marketing Research

The purpose of this section on academic market research has not been to provide instruction in the use of popular tech niques. Rather, it is to demonstrate what can be learned from

market research about a college's student markets, its competition, its image, and market position in the eyes of prospective students, and which college attributes best discriminate between admitted applicants who matriculate and those who do not.

Academic market research is such a valuable tool for effectiveness in the student marketing and recruitment phase of the enrollment management process that it is being used more widely every year. This fact increases the importance of using such techniques responsibly. Fortunately, some researchers are interested in exploring the appropriate use of academic market research techniques. Litten, for example.

Referred to as "the conscience of the profession" of academic market research by Lay and Endo (1987, p. 2), Litten has provided a set of ethical guidelines for the practice of academic market research. These include:

1. "Subterfuge" should be avoided. Market research intended to study student enrollment behavior should never be "disguised" as another type of study.
2. Any market research project whose findings will not be made public should be "identified as private research" to be used for college planning.
3. Researchers should be thoroughly trained in market research techniques, particularly "student or alumni labor" who should be carefully supervised.
4. In studying the activities of other institutions, it is "unethical . . . to send bogus inquiries or applications from fictitious students."
5. Acquiring data through the merging of files should only be done after involved subjects have received "at least a general statement of potential merging."
6. Information may be acquired from "third party informants" such as parents or high school counselors only after the student has been informed.
7. "Legitimate sample frames" may be developed from lists only after students on the list have been so informed.
8. Students must be protected from "excessive research requests" and "initial contacts" should be made only through the less obtrusive mailing process (Litten 1981, pp. 115–16).
9. Academic market researchers must not fall victim to "the poison of proprietary attitudes" about research methods

and findings. We learn much from sharing "each other's mistakes and successes. Maximum time limits should be established, beyond which all methods and findings should be made public (Litten 1987, pp. 11–12).

10. We must avoid the "demon of arrogance" with respect to both the subjects of our research and the administrative users of that research. We must come to understand and communicate within their perspectives on our research issues (Litten 1987, pp. 12–13).

Summary

This section of the report has reviewed and analyzed what we learned in student enrollment behavior in the last phase of the college choice process—selection and attendance. Studies of this phase usually are conducted from the perspective of individual colleges seeking to determine which institutional attributes are significant in distinguishing between those who matriculate and those who do not. They rely on institutional databases which often are developed by the college's institutional research or admissions offices.

By examining the findings of 10 studies we were able to determine which college attributes were most important in distinguishing between students who choose to enroll at a particular institution and those who do not.

The marketing concept in higher education involves applying techniques of marketing research to identify the competition, determine the institution's image and market position, and segment student markets according to characteristics that may differentiate among students in terms of how attractive they find a college's image compared with its competitors' images. The report also described specific illustrations of academic market research techniques.

The purpose of the report is to aid the development of a foundation for greater effectiveness in the student marketing and recruitment phase of the enrollment management process. Perhaps the report also will help increase the effectiveness of more specific marketing, recruitment, and admissions tactics, which are not covered in this report. Many fine books can provide guidance in these areas (Beder 1986; Grabowski 1981; Kotler and Fox 1985; Lovelock 1984; Lowery 1982; Simerly 1989; Smith and Hunt 1986).

CONCLUSIONS AND RECOMMENDATIONS

This report aims at helping administrators, policy makers, and researchers develop a foundation for more effective enrollment planning, student marketing, and recruitment. These are important parts of the enrollment management process. It is hoped that the report will make a worthwhile contribution to "the development of a specialized knowledge base for enrollment managers" (Hossler 1984, p. 8).

The following outlines the evolution of the growing interest in, and importance of, understanding enrollment and college choice behavior.

Why Understanding Enrollment and College Choice Are Important

From the perspective of the early 1970s, the pessimistic expectations regarding enrollment in the higher education marketplace of the 1980s appeared to be well substantiated and sobering, even intimidating. Changes in demographic, economic, and public policy aspects of the marketplace environment threatened reduced enrollments, budget deficits, retrenchment, and institutional closings during a time of rising student consumerism.

Many administrators in the 1970s began to concentrate more effort on enrollment maintenance, became more responsive to market interests and more aware of the increasingly competitive nature of student recruitment. They also began to engage in market oriented activities intended to attract students with desired academic and nonacademic characteristics to their campuses. Breaking with the past, each year's students became more like academic shoppers or consumers, preferring vocational, occupational or professional courses over courses in the traditional arts and sciences. Colleges and universities made surprisingly rapid and extensive market oriented responses in the form of changes in academic programs to match student demand and attract students.

From the 1970s through today, colleges have developed two fundamental market oriented desires. They want to plan and forecast their enrollment more effectively, and they want to influence the college going decision making process of students more effectively. The study of college choice behavior is of great practical importance therefore for administrators who want greater effectiveness in these two areas.

The study of student enrollment behavior at the macro level indicates how changes in environmental characteristics—

outside an institution's control—and changes in institutional characteristics—within an institution's control—affect an institution's total enrollment.

The study of the college choice behavior of students at the micro level indicates the ways in which environmental, institutional, and student characteristics affect a student's choices about whether or not to attend college and which institution to attend. The results of these studies provide the fundamental knowledge bases for enhancing the effectiveness of enrollment planning activities as well as student marketing and recruitment activities.

Implications for Institutions: Macro-Level Studies

From the standpoint of the institution, the most important contribution of the macro-level studies of enrollment behavior is their estimation of the probable effects of environmental factors on an institution's enrollment. The enrollment effects of changes in environmental characteristics serve as fundamental guidelines for institutional enrollment forecasting and the enrollment planning assumptions required to estimate revenues and expenditures for budgeting purposes. A thorough appreciation of the enrollment effects of such factors enhances the administrator's capacity for making the well-informed judgments required for effective planning.

Administrators understand only too well the potentially negative enrollment effects of a decreasing population of eligible students, the proximity of competing institutions to large numbers of eligible students, or cutbacks in government sources of student financial aid. However, the probable enrollment effects of changes in the economy may seem more complex.

It is important to remember that in spite of the growing number of college graduates seeking jobs, college graduates and noncollege graduates remain primarily noncompeting groups in the job market. College graduates most often seek and obtain positions that are professional or managerial, while noncollege graduates most often obtain sales, clerical, operative, laborer, or farm worker jobs (Rumberger 1984b).

While improved job market opportunities for college graduates may have positive enrollment effects, improved job market opportunities for noncollege graduates are likely to have negative enrollment effects. For many potential students, more jobs and better pay for noncollege graduates represent greater

foregone income opportunities (one type of higher costs) when they attend college.

Economic conditions and college enrollment

General economic recessions tend to stimulate college enrollment by reducing these foregone income opportunities for potential students (Mattila 1982, pp. 250-251). Recessions may enhance this effect on enrollment because employment in the types of jobs held by noncollege graduates is more likely to be reduced, while employment in college-level professional and managerial positions tends to remain more stable.

While worsening job market opportunities for noncollege graduates stimulates college enrollment, deteriorating opportunities for college graduates tends to reduce enrollment. However, it appears that an institution's curriculum has the potential to help insulate it from such enrollment effects of job market changes. Specifically, when conditions in the college job market worsen, enrollment favors colleges emphasizing curricular opportunities in specialized professional or occupational curricula. When college job market opportunities improve, enrollment favors colleges emphasizing traditional liberal arts and sciences programs. Breadth and balance in these two types of curricular offerings has the potential to cushion the negative enrollment effects of a poor college job market (Paulsen and Pogue 1988).

It is the enrollment effects of interactions between student and institutional attributes which are more complex and the least well understood.

Implications for Institutions: Micro-Level Studies

The most important contribution of the micro level studies of individual student enrollment behavior is their ability to estimate the effects of student characteristics, institutional characteristics, and their interactions on the probability that a student will choose a particular college or noncollege option. The enrollment effects of student attributes serve as guidelines for dividing students into groups possessing characteristics similar to those who most often enroll at a particular college. This enables institutions to identify the student markets with the greatest potential enrollment yield for a particular college or university.

Understanding the probable enrollment effects of institutional characteristics can help faculty and administrators develop the most appropriate marketing mix of attractive programs, delivered in appropriate places, at acceptable prices. The probable enrollment effects of interactions between stu

dent and institutional characteristics provide guidelines to help administrators effectively tailor and target their college's marketing mix of institutional attributes according to student characteristics in high enrollment yield markets.

Most administrators know that, in general, when certain factors are present students are more likely to attend college. For instance, when they are white, unmarried, have high income, and followed a college preparatory curriculum in high school. Administrators also are well aware that, in general, students are more likely to attend college in general, or one particular college, when tuition, room, and board costs are lower, financial aid is more available, the distance from home to college is not great, and the breadth of curriculum offerings is great.

It is the enrollment effects of interactions between student and institutional attributes which are more complex and the least well understood. However, an understanding of these is of critical importance in attracting the students most desired by a particular college.

When student and institutional attributes meet

Any thorough understanding of student college choice behavior must be intensely focused on the points of interaction between student and institutional attributes. For example, a particular college becomes less attractive when tuition, room and board, and distance from a potential student's home increase. However, these effects are much greater for lower income and lower aptitude students. They become much less important as income and aptitude level rise.

A college becomes more attractive as the availability of scholarship aid increases. However, this effect is reduced for high income students who have lower chances of receiving aid; the effect is enhanced for nonwhite and high-achievement students who have a greater probability of receiving scholarships. A college becomes less attractive to students with aptitudes either well above or well below the average aptitude of students at a particular college. Students prefer to matriculate at an institution where students are similar to themselves more than they prefer to attend the college with the highest academic standing.

Finally, recent research indicates that for a given income and aptitude level, student responsiveness to changes in the tuition, room and board, financial aid, and foregone earnings

components of college costs are now very similar. This dispels some old myths about different responsiveness.

College aspiration and its formation

The first phase of the college choice process involves the factors and processes which influence and shape a student's college-going aspirations, or plans. Studies reveal three categories of factors which may encourage or discourage the formation of college aspirations: *socioeconomic background factors* (such as race, parents' marital status, educational attainment and occupational status, and family income), *academic factors* (aptitude and achievement), and *contextual factors* (including disciplinary problems, self-esteem, attitudes toward school and success, and peers' college plans). Essentially, each of these factors is an attribute or characteristic of a potential student.

The case for early intervention. These studies' special contribution involves some clear implications for early intervention to encourage the formation of college aspirations. For example, a contextual factor, parental encouragement, has been found to have a greater influence on college aspiration formation than either socioeconomic status or academic aptitude. While the socioeconomic status and intelligence of a particular student are very difficult (if not impossible) to influence, parental encouragement is a social-psychological process which may very well be open to modification through counseling of parents and their children.

This makes parental encouragement a powerful intervening variable between the immutable socioeconomic status and aptitude factors and the formation of college-going aspirations.

Other implications for early intervention in aspiration formation involve some important differences in the factors which influence this process for blacks compared to whites. In this process, whites seem to be influenced by most of the earliest factors such as socioeconomic background and academic aptitude, but only some of the later ones.

However, blacks do not seem to be influenced by any of the earliest factors and are influenced by many of the later factors, such as achievement in school, encouragement by parents, teachers, and friends, and self-esteem. Whites also are influenced by some of these later factors, including school achievement and significant others' encouragement. The most

important implication here is that the later factors of school achievement, significant others' encouragement, and self esteem are all ones which early and continuous intervention has an opportunity to influence.

These are all areas in which early intervention by concerned administrators, teachers, counselors, and parents could make a difference. How many potential students should be, and would be, in college if even just one of these influential factors were promoted: school achievement, self esteem, parental, teacher, and counselor encouragement?

Search and application

The second phase of the college choice process involves students seeking and acquiring information about different colleges. They do this by learning about different important college attributes such as programs, quality, cost, and location by means of their preferred sources of information, usually from such sources as admissions officers, college publications, high school counselors, alumni, and campus visits.

Of course, the importance of various college attributes and sources of information vary according to student attributes. In fact, the student attributes represented in the socioeconomic background and academic factors which shape the formation of plans for college have an influence in this second phase even to the point of leading students to preselect certain colleges. The general pattern seems to be that as students' academic aptitude, achievement, educational aspirations, family income, and parental education all increase, their choices are more likely to include highly selective, high-cost, distant, private, four-year institutions.

Large numbers of potential students are spread across the entire spectrum of possible socioeconomic backgrounds and academic abilities. This means that there are groups of potential students who will tend to preselect colleges at each of the many possible categories of attributes such as selectivity, cost, distance, control, and level.

Each college must ask itself whether the attributes of students they currently seek suggest that these students are the ones who will most likely find the college appropriate and attractive. In the face of a college choice process which appears to be characterized by preselection according to student attributes and college attributes, an effective course of action for each college is to find an appropriate match

between the attributes of students it seeks and the attributes of its own institution.

Selection and attendance

During this final phase of the college choice process, admitted applicants evaluate and rate the attributes of their preferred institutions to select one college to attend. A certain predestination is evident even here as students appear to develop evaluation criteria that are influenced by their socioeconomic background and academic ability. College attributes which frequently are found to discriminate between students who select a particular college to attend include cost, financial aid, programs, size, location, quality, social atmosphere, athletics, and religious emphasis.

Institutions engaged in academic marketing research usually conduct studies of student enrollment behavior in the selection and attendance phase. It is through academic marketing research that an individual college or university has the best chance of finding the best match, or fit, between the attributes of its students and its own institutional attributes.

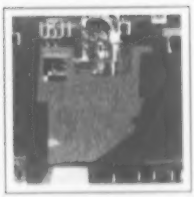
Statistical procedures can be applied productively to test score submission data, application overlap data, and data from student questionnaires on student attributes and student ratings of the attributes of a particular college compared to those of its competitors. These procedures allow a college to identify its closest competitors, assess the college's image as perceived by admitted applicants in terms of various college attributes, and determine its market position compared with its closest competitors.

The college also can examine admitted applicants' ratings of its own attributes and those of its competitors to identify what determines choices between their own college and a competitor. Another useful activity is to divide student markets according to both student attributes and their ratings of college attributes, and then identify student market segments by enrollment yield.

A college's marketing mix

In higher education, a college's marketing mix is essentially a combination of its attributes arranged in the categories of programs, prices, promotional activities, and places of delivery. For most colleges there are two primary enrollment strategies:

- seek students possessing attributes consistent with the attributes of the college's current marketing mix, or;
- adjust the attributes of the college's current marketing mix so they are more consistent with the student attributes desired by the college.



Recommendations for Research and Policy

Important implications for future research center on both topical areas and the need for special types of databases. Following are some suggestions on the next steps colleges and universities need to take.

Look at the college going behavior of students of nontraditional ages and from nontraditional groups.

While the college going behavior of traditional aged students has been widely studied, enrollment behavior of students of nontraditional age has received relatively little research attention. This is unfortunate and even peculiar, since one of the greatest sources of the increasing numbers and participation rates of college students comes from this group.

An important part of higher education's future may depend on how effectively colleges and universities can serve the educational needs of this very large potential student population. Many well crafted studies of the college choice behavior of students of nontraditional ages are needed now. We must better understand their perceptions, preferences, and behaviors if we are to better serve their educational needs.

The same need for more research pertains to other groups where the potential for increased enrollment and college participation rates is great. Further investigation is needed to determine whether the way various subgroups in the population proceed through the college choice process is unique. The greater our understanding, the greater our ability to serve the educational needs of women, minorities, foreign students, and other groups.

Develop dependable models of how graduate students choose graduate schools.

The large number of people with bachelor's degrees in the job market has for some time made the pursuit of graduate

degrees much more frequent, yet we are just beginning to study the patterns of graduate student-graduate school choice. Particular departments within institutions may take on more importance than they did in college choice models. Developing dependable models of graduate student choice behavior is of great importance and probably will be quite challenging. So far, Malaney (1988, 1987) seems to be a voice crying in the wilderness on this issue.

Learn as much as possible about the search process.

Our present understanding about the "search" portion of the search and application phase of college choice is modest and inadequate. What kind of timing, and activity or event sequences actually characterize this important period of decision making? We need more well crafted research efforts in this area to build on the efforts of Lewis and Morrison (1975) and Gilmour (1978). These may need to be more qualitative in approach than many of our research designs investigating stages of the college choice process (Hossler, Braxton, and Coopersmith 1989, pp. 279-281).

Develop new databases to meet new needs.

More effective total enrollment or macro-level studies could be conducted with more pooling of time series and cross-section data on environmental and institutional characteristics. A premise of this report is that the changing environment of the higher education marketplace was an important motivator for more market oriented institutional responses to an increasingly assertive and changing student consumer profile.

Micro-level studies using pooled data can investigate the interactive effects of environmental and institutional factors on enrollment. Perhaps they could unveil more ways in which institutional attributes can be modified to effectively offset or cushion the potential negative enrollment effects of some environmental changes.

Perhaps the most promising, and productive, of databases would be an extensive longitudinal micro dataset on individual students which would permit well crafted investigation of how environmental, institutional, and student characteristics interact on the probability of a student's college attendance or college choice.

Establish offices of institutional research on every college and university campus.

Every college and university, large or small, should have an office of institutional research engaged in academic market research. In addition, inter-institutional cooperation should promote multiple institution studies. All such efforts are in the constructive pursuit of the best possible match between student attributes and college attributes across the nation.

Enlist the support of government and private resources.

College researchers and administrators will need the support of government agencies and private foundations interested in improving our capacity to meet the nation's educational needs. State and federal government policy-makers should have a strong interest in supporting and encouraging both macro and micro-level studies to clarify further what determines enrollment and college choice behavior.

For example, the design and improvement of state and federal grant and loan programs, if based on a growing understanding of college choice behavior, have a greater chance of promoting the social and educational goals of equal access, equity, and socioeconomic well-being for society. Tax and transfer disbursements in the form of subsidies to higher education are national investments in these and other desired outcomes.

In conclusion, the American people place their resources and their trust in the hands of government policy-makers hoping that they will pursue these social goals in accordance with the most advanced state of our knowledge about student enrollment and college choice behavior.

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INDEX

A

Academic ability
    students, 7
Admissions selectivity, 16

B

Boston College, 60, 62-64
Brown University, 65
Buyer's market, 6

C

Carleton College, 60, 64
Carnegie Commission, 5
Carnegie Council Survey (1978), 5
Carnegie Mellon University, 60
College aspiration formation, 75
    ability, 37-39, 50
    background, 37-39
    context, 37-39, 42
    ethnic background, 49
    family size, 40
    income, 49
    parental influence, 40-42, 49
    race, 43-44, 48
    religion, 49
    search and application, 44-46, 76
    sex, 48
College attendance
    economic motivation, 3
College choice, 3, 6, 71
    conceptual foundations, 7
    macro-level studies, 8-9, 72
    micro-level studies, 8-9, 73
    models, 35-36
    selection and attendance, 59-60, 77
    stages, 35-36
    student attributes, 54-58
College participation rate, 4
College recruitment, 3, 6
Colleges
    attendance, 30-31
    competition, 19
    costs, 13, 19, 29-30
    job market benefits, 18
Cornell University, 66
Curriculum, 17

D
Dartmouth College, 65
Discriminant models, 9

E
Enrollment
    college attributes, 61
    demographics, 18
    economic conditions, 73
    professional studies, 5
    student attributes, 60, 74
    variation, 19
    vocational studies, 5
Enrollment demand, 11
    macro-level studies, 12-17, 72
    micro-level studies, 73
    student groups, 23
Enrollment planning, 3, 6, 18
Environmental characteristics, 7, 15, 28-29

F
Family characteristics, 6
    students, 7

G
Guidelines
    enrollment planners, 17
    market research, 67-68

H
Higher education demand, 6
Higher education marketplace, 3

I
Ideal college, 66
Information sources, 50-53
In state students, 16
Institutional characteristics, 6-7, 16, 26-27, 47-50
Institutions
    attributes, 72
    implications for enrollment, 72
    location, 16
Investment
    college education, 14

J
Job market
    and enrollment, 13

Job market opportunities
college graduates, 21
noncollege graduates, 21
John Carroll University, 60

L

Logit model, 9

M

Macro level studies
enrollment, 72
institutions, 72
Market research, 61 62
academic, 1
concepts, 23
ethical guidelines, 67 68
qualitative approaches, 67
strategy, 25
Market segmentation, 24
Micro level studies
enrollment, 73
institutions, 73
Mid City College, 60
Military service
and enrollment. 14
Minnesota, University of
enrollment forecast, 20

N

National Student Database, 66
New student consumer, 4
Nontraditional students, 31 33
Northeastern University, 60

O

Opportunities
college graduates, 14

P

Pacific Lutheran University, 65
Part time students, 16
Princeton University, 65
Probit models, 9
Professional studies
enrollment, 5, 17

R
Recruitment, 3
Research
college enrollment, 78-80
Rutgers University, 60

S
South Dakota
University of, 66
Status attainment
students, 7
Strategic planning, 11
Student characteristics, 7, 15, 18, 26-27, 46
Student institution fit, 7
Students
attributes, 74
college aspiration, 37, 75
in state, 16
self distribution, 8

T
"Taken for granted" variable, 41
Traditional education, 17
Tufts University, 60

V
Vocational studies
enrollment, 5

Y
Yale University, 65

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